JOIDES PLANNING COMMITTEE SUMMER MEETING
11 - 13 August 1992
Corner Brook, Newfoundland, Canada

REVISED MINUTES
(accepted as revised December 4, 1992)

Planning Committee (PCOM)

J. Austin, Chairperson - University of Texas at Austin, Institute for Geophysics
K. Becker - University of Miami, Rosenstiel School of Marine and Atmospheric Science
W. Berger - University of California, San Diego, Scripps Institution of Oceanography
H. Dick - Woods Hole Oceanographic Institution
M. Fisk (for R. Duncan) - Oregon State University, College of Oceanography
H. Jenkyns - University of Oxford (United Kingdom)
Y. Lancelot - Laboratoire de Géologie du Quaternaire, Marseille (France)
H.-C. Larsen - Geological Survey of Greenland, Copenhagen (ESF Consortium)
B. Lewis - University of Washington, College of Ocean and Fishery Sciences
J. Malpas - Memorial University (Canada-Australia Consortium)
J. Mutter - Columbia University, Lamont-Doherty Geological Observatory
A. Sharaskin - Geological Institute, Moscow (Russia)
H. Sigurdsson (for J. Fox) - University of Rhode Island, Graduate School of Oceanography
A. Taira - Ocean Research Institute (Japan)
B. Taylor - University of Hawaii, School of Ocean and Earth Science and Technology
U. von Rad - Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
J. Watkins - Texas A&M University, College of Geosciences

Liaisons

P. Dauphin - National Science Foundation
T. Francis and M. Storms - Science Operator (ODP-TAMU)
D. Goldberg - Wireline Logging Services (ODP-LDGO)
T. Pyle - Joint Oceanographic Institutions, Inc.

Guests and Observers

E. Ambos - National Science Foundation
R. Arculus - University of New England (Canada-Australia Consortium)
J. Baldauf - Science Operator (ODP-TAMU)
G. Brass - University of Miami, Rosenstiel School of Marine and Atmospheric Science (Nansen Arctic Drilling Program)
W. Collins - University of Washington, JOIDES Office
J. Delaney - University of Washington, College of Ocean and Fishery Sciences (InterRIDGE)
I. Gibson - University of Waterloo (DH-WG Steering Committee Chair)
T. Loutit - Bureau of Mineral Resources, Canberra, Australia (SL-WG Co-Chair)
K. Schmitt - University of Washington, JOIDES Office
F. Vine - University of East Anglia (OD-WG Chair)
E. Winterer - University of California, San Diego, Scripps Institution of Oceanography (Leg 143 Co-Chief)

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

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

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SUMMARY OF PCOM ACTIONS

PCOM approves the minutes of the 21 - 23 April 1992 PCOM meeting, with corrections as noted. (p. 8)

PCOM adopts the agenda for the 11 - 13 August 1992 PCOM meeting. (p. 9)

In order to help ODP-TAMU provide JOI, Inc. and PCOM with least-cost procedures/policy for expanding quality core repository facilities, which will be discussed at the December 1992 PCOM meeting, PCOM requests its member institutions, and especially international partners, to provide ODP-TAMU with information on their interest and ability to host such facilities. (p. 19)

In light of the continuing requirement for a coring system that is capable of recovering rock types that cannot be effectively drilled by standard rotary bits, PCOM reconfirms its commitment to the development and deployment of a diamond coring system. (p. 33)

PCOM requests that the Science Operator (ODP-TAMU) issue a RFP to the ODP community to provide a shipboard and shorebased computing facility which meets the performance specifications set by DH-WG at its Toronto meeting. The responses to the RFP are to be evaluated by an impartial expert committee including PCOM Chair, DH-WG Chair, representative of the Science Operator, representative of JOI, Inc., and two other PCOM-appointed members. This evaluation committee will report to PCOM at its December 1992 meeting. (p. 47)

PCOM recognizes that both the DCS and upgrade of the ODP computing system are of great importance to ODP science. PCOM further notes that some savings for the Leg 151 ice-support vessel may be possible. If such savings are realized, DCS should be funded at a level of $400,000 and any additional overflow (possibly several hundred thousand dollars) will go toward computing upgrades in FY93. PCOM realizes that this may delay land testing of the DCS to FY94 and sea testing to FY95. (p. 48)

After consultation with interested members of the community, including Panel Chairs, members of PCOM and others, PCOM has reconsidered its decision made at the April 1992 PCOM meeting and endorses the original recommendation of NARM-DPG to drill a transect across the Iberian margin, in the priority order IAP-4, IAP-2, IAP-3, and alternates. PCOM furthermore charges the Co-Chiefs to attempt penetration of the basement to several hundred meters in order to increase the chances of recovering diverse lithologies containing a record of tectonic evolution. (p. 55)

PCOM commends the Steering Group for *In Situ* Pore-Fluid Sampling for identifying important opportunities in advancing research on pore fluid sampling and outlining the technology developments required. PCOM is strongly in favor of pursuing this research and development and intends to issue the necessary RFP in spring 1993 for funding 1 October 1993. *[Note: Consensus]* (p. 58)

Acknowledging the great importance and impact of large, thematic, multi-leg programs, PCOM charges thematic panels to follow continuously and evaluate such programs by naming watchdogs as appropriate and by making annual written reports to PCOM on program progress and performance and the possible need for program changes at the scale from drilling leg priority to detailed siting. (p. 66)

PCOM charges the relevant thematic panels to evaluate the reports of the Offset(-Section)-Drilling and Sea-Level working groups in the immediate future. The two working groups will remain alive, but inactive, until the December 1992 PCOM meeting, when a final decision on their fate will be made. (p. 66)

PCOM endorses all personnel actions taken at the August 1992 PCOM meeting. *[Note: Consensus]* (p. 67)

After discussion of proposals highly-ranked and considered drillable in FY94 by the four thematic panels and on the general ship track defined by PCOM at its April 1992 meeting, PCOM has decided that the following programs, for which SSP considers that the required site survey data exist or that surveys could be completed by November 1992, should be included in the FY94 Atlantic Prospectus (and the following PCOM watchdogs are assigned):

323-Rev2	Alboran Basin evolution	(Larsen)
346-Rev3	Eastern equatorial Atlantic transform	(Fox)
361-Rev2	TAG hydrothermal system	(Mutter)
369-Rev2	MARK	(Taylor)
380-Rev3	VICAP/MAP (only MAP ready for FY94)	(Arculus)
388/-Add	Ceara Rise	(Berger)
391-Rev	Mediterranean sapropels	(Jenkyns)
405-Rev	Amazon Fan	(Austin)
414-Rev	North Barbados Ridge	(Taira)
NARM-DPG	Non-volcanic margins-II	(von Rad)
NARM-DPG	Volcanic margins-II	(Duncan)

(p. 70)

In response to a request from SSP, PCOM establishes a 1 November 1992 deadline for submission to the ODP Site Survey Data Bank of available data and schedules for completion of survey work for proposals to be considered for drilling in FY94. Decisions on FY94 scheduling will be based on proponents' compliance with this deadline. *[Note: Consensus]* (p. 71)

Because SSP was concerned that the lead-time from data submission deadline to PCOM meeting had been too short to ensure full compilation in the Site Survey Data Bank, PCOM sets a deadline of 1 July for submission of proposals to the JOIDES Office and of site survey data to the ODP Site Survey Data Bank. *[Note: Consensus]* (p. 71)

Summer Meeting JOIDES PCOM
Tuesday, 11 August 1992

956. Welcome and Introduction

Austin called the 1992 Summer Meeting of JOIDES PCOM to order at 8:55 AM. He called for introductions around the table, noting that Jenkyns had been awarded the Major Edward D'Ewes Fitzgerald Coke Medal of the Geological Society. Jenkyns received a round of applause.

Austin introduced Malpas, who explained meeting logistics. Austin thanked Malpas for the outstanding two-day field trip to the Bay of Islands ophiolite and sedimentary rocks on the Port-au-Port Peninsula, which had preceded the meeting.

957. Approval of Minutes of 21 - 23 April 1992 PCOM Meeting

Austin called for comments, corrections and approval of the minutes of the 21-23 April 1992 PCOM Meeting held at Oregon State University. The minutes included modifications received by the JOIDES Office through 27 July 1992.

Francis noted that *JOIDES Resolution* would not be required to enter dry dock until FY94 (a correction to p. 13, para. 2 of the revised draft minutes). Blum explained that the comment on p. 60 of the revised draft minutes about G. Pautot's attendance at SSP meetings had been the result of a misunderstanding and should be deleted. Fisk noted that J. Byrne was President of Oregon State University (p. 1, revised draft minutes).

PCOM Motion

PCOM approves the minutes of the 21 - 23 April 1992 PCOM meeting, with corrections as noted.
Motion Malpas, second Jenkyns Vote: for 17; against 0; abstain 0; absent 0

958. Approval of Agenda

Austin stated that the main purposes of the Summer Meeting were to: hear reports of liaison groups (J. Delaney, InterRIDGE; G. Brass, NADP); make modifications to the near-term drilling program (legs 146, 148, 149, 150); consider the future of DCS development and discuss ODP-TAMU's report on DCS, written in response to PCOM's April 1992 instruction; consider computer upgrades and data management within ODP (e.g., ODIN proposal, University of Hawaii position paper/proposal); and conduct routine JOIDES business. In addition, PCOM would: hear summaries of recent drilling legs (Leg 143 only; neither Leg 144 Co-Chief had been able to attend); consider strategies for issuing RFPs for pore-fluid sampling and deep drilling and how to advance those initiatives in light of the current fiscal situation; define format and content of the FY94 *Atlantic/eastern Pacific Prospectus* (SSP had provided PCOM with assessments of drillability for candidate proposals); discuss outside party use of ODP re-entry holes; and name a PANCHM Chair for the 1992 Annual Meeting.

Austin called for any additions to the agenda. In response to a question from Becker, Austin said that discussion of outside party use of re-entry holes would be general, rather than specific to OSN-1. He called for adoption of the agenda.

PCOM Motion

PCOM adopts the agenda for the 11 - 13 August 1992 PCOM meeting.
Motion Lewis, second Taylor Vote: for 17; against 0; abstain 0; absent 0

959. ODP Reports by Liaisons to PCOM

NSF

Dauphin began by also thanking Malpas for arranging the field trip.

NSF had requested a 17.6% budget increase for FY93 (Appendix 1). The Budget Enforcement Act, however, set a ceiling for the US Congress and would instead require a 1.3% overall budget reduction. It was as yet uncertain how that would affect NSF and ODP, because NSF was competing with the Veterans Administration, Housing and Urban Development and other US government agencies. NSF would meet its FY93 obligations, however, and JOI, Inc. had been given a target figure. FY93 figures in Appendix 1 were estimates. Dauphin felt more optimistic about FY94.

In FY92, $36.38M was allocated to ODP (Appendix 1), divided between operations and management ($23.81M), unsolicited science proposals ($6.86M), USSSP/USSAC ($4.70M), and other NSF activities ($1.01M). Funding allocations to unsolicited proposals are shown in Appendix 1.

Various reviews of ODP had been held as part of the renewal process (Appendix 1). NRC had met before the April PCOM meeting. Subsequently, NSF had formed a panel for review of the US program. The reviews shared some common recommendations, e.g., involve scientists outside the ODP community, develop stronger links with other programs (Appendix 1). NSF would pay particular attention to those recommendations. Results of all reviews had been forwarded to a NSB committee, which would meet this week and recommend to the entire NSB whether or not to continue ocean drilling in the US. Dauphin was optimistic about the outcome. NSF was asking for renewal for 10 years in principle, with permission to spend for 5 years up to LRP-mandated amounts.

International partners had reported on their renewal status at the June 1992 ODPC meeting. Positive responses had been received from most partners. The US would keep Russia's MOU and IPR agreement open, but on inactive status as of 1 October 1992, so that Russian participation could be restarted if funds become available. Taira reported that Monbusho had approved Japanese renewal and that the next step would be to get a budget, probably for 5 years. Dauphin noted that Japanese renewal would be for 10 years in principle with a 5-year commitment. German renewal would be on the same basis. UK had renewed some time ago and ESF was almost there. Canada had progressed 75% of the way to renewal at the June 1992 ODPC meeting. Malpas responded that that figure was now 99%. Dauphin added that Australia was pretty much on line. Discussions with France were continuing. NSF was insisting on a 5-year firm commitment. Lancelot responded that the commitment was there and that only the wording was contentious, i.e., if an additional platform became available in <5 years, France did not want ODP to be prevented from using it. France was now 99% of the way toward renewing.

Dauphin explained that the next step would be for the US State Department to designate NSF as signatory for MOUs. NSF hoped to have that authority by the end of August 1992 and to start signing MOUs soon.

Malpas asked about the status of OPCOM funds. Austin replied that he had been instructed by NSF at EXCOM not to use that term. Optimism had gone, but priorities had been set and the exercise had not been wasted. Lancelot commented that ODP had a low rate of increase relative to the rest of Geosciences in NSF (Appendix 1). Dauphin replied that it had been the understanding from the beginning of ODP that NSF's contribution to its budget would increase at ~4%/year, while international partner contributions would undergo step increases. NSF's contribution was now at 58.7% of total budget. Annual increase was held to 4% so that NSF's share did not become disproportionate. Lancelot stated that new developments within ODP were being restricted. Other NSF branches were requesting large increases, while ODP was perceived as stable or static. Dauphin remarked that the rest of the earth sciences did not necessarily view ODP as benevolently as PCOM. He was, however, now sensing the beginnings of a movement at NSF to request a big increase in ODP's budget. Lewis commented that the LRP budget, established years ago, was the target, but that it did not incorporate new technological developments. In response to a request for clarification from Francis, Dauphin said that NSF's share was 58.7% of commingled funds. Dick pointed out that there had been strain in the earth sciences community when ODP had been created. Large increases given by NSF to other geosciences initiatives were, in part, compensation for that initial stress. Pyle added that it was often politically expedient to ask for a lot at the beginning of a program with the proviso that future requests would be small. With respect to Lewis's comment, Pyle noted that the LRP budget figures did include new technology, but that the amounts were estimates.

Austin explained that, at the June 1992 EXCOM meeting, he had asked R. Corell and D. Heinrichs of NSF about how to get a greater-than-inflationary increase for ODP technology development. He had been told that it was up to the scientific community to come up with the arguments. OPCOM was considered insufficient. PCOM might need to consider how to proceed to document ODP's needs. Lancelot pointed out that the same thing happened in France. Other initiatives were receiving more money and there, too, the message was "don't rock the boat". He felt, however, that this was a bad sign. The ODP community should be more aggressive in pushing its science. There would be no problem if ODP's scientific objectives were at the forefront of science. Delaney commented that RIDGE and InterRIDGE had had the same problems. It was not enough simply to push cutting-edge science. The issue was one of fundamental versus applied science. ODP had to compete with global environmental studies—applied science. Austin stated that PCOM would return to this issue in order to consider possible courses of action.

Dauphin continued his report by noting that NSF ODP and Earth Sciences divisions were considering jointly supporting a planning office for OSN (Appendix 1). NSF's ODP and Earth Sciences divisions were also jointly considering joint funding to extend NJ/MAT (Leg 150) drilling onshore. The decision would be made in September. *R/V Knorr* and *R/V Melville* were back in service. *R/V Nathaniel Palmer*, a new Polar Programs icebreaker, was now in service. *R/V Thomas Washington* had been retired and would be transferred to Chile in September/October 1992. *R/V Knorr* was under consideration as a replacement for *R/V Atlantis II* as *DSRV Alvin* support ship. The FY93 NSF budget included funds for design of an Arctic vessel with icebreaking capability. Finally, E. Ambos had joined NSF and had been directly involved in setting up the OSN planning office.

Pyle outlined the status of the FY93 Program Plan. An NSF review panel had made the following recommendations: 1) contract out more drilling and logging technology; 2) develop better strategy for dissemination of results, particularly to the general public; 3) increase and expand post-cruise analysis of ODP samples and data; 4) if publications were to be modified, keep a "comprehensive and easily accessible archive of data and interpretations that exist now in ODP final reports"; and 5) ensure continuing cost-effectiveness and minimize administrative costs.

ODP's budget had been reduced to a 6-partner level. The FY93-96 Program Plan had been approved by EXCOM and was now at NSB (see budget in Appendix 2). LRP budgets were approximately equivalent to the 7-partner budget. With 6 partners, the budget would be below LRP values for most years. ODP was not approaching LRP projections in its ability to do new things. Of FY93 SOEs (Appendix 2), computer services upgrades, shipboard science equipment and DCS would all disappear with the budget at the 6-partner level. Dauphin noted that SOEs were still at 4% of ODP's budget and had, at least, not been cut. In response to a question from Austin, Pyle explained that the $400,000, which NSF had asked JOI, Inc. to remove from the FY93 budget, had been provisionally taken from DCS.

Pyle went on to discuss the status of high-temperature tools. A science plan had been completed for a high-temperature borehole fluid sampler (JOI, Inc.'s *ad hoc* Edmond Committee) and submitted to DOE and ODP (PCOM). DOE initial funding for the tool had gone to Sandia. ODP was committed to funding the shipboard component, pending review of the science plan and a proposal.

A RFP for internationalization of the JOIDES Office was under review at NSF. Regarding the logging RFP, a SOW update had been requested from ODP-LDGO and DMP had been asked for options for additions to the basic SOW. The RFP would be sent out in August.

Turning to personnel issues, Pyle noted that W. Collins would be the Executive Assistant and non-US Liaison at the University of Washington JOIDES Office. E. Kappel had given birth to a boy and R. Smith had left JOI, Inc.

Science/budget priorities requiring consideration were: borehole fluid sampler (money from DOE), RFP for pore-fluid sampler (Gieskes), DCS, computer upgrades, core repository expansion and public relations. The need for core refrigeration should also be considered by PCOM. ODP-TAMU's geriatric core study would not address this issue. Were the cost of power and capital cost of refrigeration equipment justified? Austin emphasized that this was an issue affecting repository expansion. Pyle suggested asking for input from, e.g., SGPP. Austin replied that he could ask the panels to consider core refrigeration. PCOM could then discuss the issue at its December 1992 meeting, if that timing was acceptable. Pyle felt that a quicker response was needed. Dick remarked that it was certainly unnecessary to refrigerate gabbros. Francis replied that hard rock comprised only a small proportion of cores. Mutter stated that the problems associated with ECR expansion would disappear if old cores could be removed from refrigeration. Pyle, however, responded that old cores were still being sampled. Gibson agreed, adding that an IHP study had shown use of older cores continued at a fairly constant level. Austin asked for comments on how an answer could be provided more quickly. He could ask the Panel Chairs to respond, but noted that a major policy shift could result from those responses. Berger felt that the approach should be to ask which cores absolutely required refrigeration and which did not. In response to a question from Taira, Francis said that more

volunteers were required to make geriatric core studies (some were in progress). Von Rad pointed out that SGPP and OHP would meet in only 6 weeks and that should be soon enough. Francis stated that little would be saved by not refrigerating cores. Austin noted that it was the capital cost that was significant. Francis felt that the amounts were still small and that this represented only fine tuning of the budget. Pyle agreed that the amounts were relatively small, but that they might still enable ODP to put out an RFP. Austin stressed that ODP-TAMU would need to know how to configure its expanded repository space. Francis agreed, but noted that ODP-TAMU rented its repositories. Pyle stated that power alone cost $40,000/year, so large sums were involved. Austin said that he would write to the panels, but he did not know whether input could be received prior to fall meetings.

SCIENCE OPERATOR

Francis reported that Leg 143 (A&G I) had been in progress during the April 1992 PCOM meeting. The deepest hole drilled in a single leg (1743.6 mbsf) had been drilled at Huevo Guyot. Winterer, a Co-Chief, would be giving a presentation on Leg 143 later in the meeting. A test of *JOIDES Resolution's* shallow-water drilling capability had been carried out at the end of Leg 143 in 38 m water depth at Anewetak (Appendix 3). A taut wire had been used for positioning and *JOIDES Resolution* stayed in position within 4% of water depth most of the time, with bigger excursions when changing heading. Recovery had been poor and the hole unstable. Drilling only reached 30 mbsf. It was felt that *JOIDES Resolution* could drill in 40 m water depth if currents were <0.5 kt. It would be helpful to have a shallow-water beacon as an additional reference to the taut wire to assist when changing heading.

Leg 144 (A&G II) successfully carried out 12 semi-hard-rock spud-ins. Only one HRB was used. The other holes were started with low WOB and low r.p.m. This procedure worked when the surface was rough and ~horizontal. ODP-TAMU Drilling Operations would think more about when HRBs were required (each costs $80,000). It might be sufficient to use a donut, which would be cheaper than a gimbaled cone. A HRB would, however, be necessary on slopes and if casing was required. MDCB (Appendix 3) had been run 3 times with success. Recovery in the B-hole, where MDCB was run, was 39% (at 58-69 mbsf), while XCB recovery from the same interval in the A-hole at that site was only 2%. MDCB coring, however, took six times more time. The port call at the end of Leg 144 had gone smoothly. *JOIDES Resolution* had received 600 visitors in Yokohama. The 3.5 kHz transducer was changed and work on instrumenting the main heave compensator (required for further DCS testing) was begun.

Four holes had been drilled at Site NW-1A on Leg 145 (NPT, Appendix 3), the deepest to 364 mbsf (APC/XCB). Recovery was 31% with XCB. APC was used to 212 mbsf in the D-hole, obtaining better recovery. Washing over the APC core barrel in order to pull it out of the diatom ooze, though requiring more time, had enabled APC to be used to greater depths. Sediments recovered were upper Pliocene diatom ooze and clayey diatom ooze. Two sites had been drilled on Detroit Seamount. A record for APC coring (398 mbsf) had been set at Hole 882A (DSM-3) in upper Miocene to Recent diatom ooze. The first hole at DSM-1 had been APC-cored to 38 mbsf. The second hole had been APC-cored to 293 mbsf and XCB-cored to 567 mbsf in diatom ooze and calcareous diatom ooze.

The Victoria, B.C., port call would be busy because: Leg 146 was complex, both DMP and SMP were meeting there, and all 450 joints of 5" drill pipe was being replaced with re-coated pipe. Leg 146 (CA) would deploy a wide range of tools: WSTP, PCS, MDCB with GEOPROPS, VPC, LAST I (and perhaps LAST II) and CORKS at two sites. Perforated liners

(Appendix 3) would be run in both CORKed holes to keep the holes open for thermistor strings and sampling tubes. The holes would be cased to ~300 mbsf, with ~30 m perforated. This would be the first time that this new hole abandonment procedure had been adopted and PPSP was being alerted. Problems were thought to be unlikely. An oblique seismic experiment and microbiological sampling would be carried out. Vancouver Island sites were near an ammunition dumping area (Appendix 3), containing both high explosives (not considered a problem) and mustard gas, which does not deteriorate and was a cause for concern. Malpas stressed that these were US Navy dumps. A stringent environmental impact study had recommended washing to 20 mbsf before coring. Francis noted that ODP-TAMU had informed the Minerals Management Service (MMS) of the US Department of the Interior about activities on Leg 146. ODP-TAMU was not, however, seeking permission from MMS because DSDP, and ODP as its successor, were excused. There should be no interference from MMS on Leg 146. That remained to be seen with respect to Leg 150. The last site drilled on Leg 146 would be Santa Barbara Basin (SBB). SBB's safety review would take place in October 1992, half way through Leg 146. Cores from SBB would be sectioned on Leg 146, but MST measurements would be made on Leg 147. Cores would be shipped from Panama following Leg 147, unsplit, for a sampling party in March 1993. Austin added that PPSP had reviewed SBB by mail and declared it "reasonably safe". Francis stated that Baldauf would discuss later how personnel for sampling SSB cores would be chosen.

The pre-cruise meeting for Leg 147 (HD) was held in June 1992. HD-3 was the favored site (water depth 3075 m), followed by HD-2 and HD-4. Two HRBs would be carried on Leg 147 (Appendix 3), but it was hoped that only one would be used. The goal was ~1000 mbsf penetration at a single site. Recovery rate should be good if the lithology was competent gabbro, but would be only ~10% if rocks were fractured. The hole would be cased to ~20 mbsf, employing for the first time a new casing hanger system (DRIL-QUIP, Appendix 3), which might replace the existing system. This would provide the option to run $10^3/_4$" casing if it was desired to deepen the hole in future.

Leg 148 (Hole 504B) Co-Chiefs would be J. Alt (Univ. Michigan) and H. Kinoshita (Japan). Francis explained that, since neither the Japanese PCOM member nor an alternate had attended the April 1992 PCOM meeting, PCOM had not named Kinoshita. ODP-TAMU had, however, been keen to get a Japanese Co-Chief and both Taira and Becker had endorsed Kinoshita. (See Appendix 3 for Co-Chief selections for other upcoming legs.)

ODP-TAMU was awaiting PCOM's decision on Leg 149 (NARM non-volcanic-I) objectives. ODP-TAMU would use the DRIL-QUIP casing hanger system at IAP-1 (assuming PCOM confirmed that site), unless problems were encountered with it at HD. ODP-TAMU had never run such large casing before and the outcome was hard to predict. ODP-TAMU had determined that splitting Leg 149 for rotation of the Sedco/Forex crew, instead of Leg 148, saved two days of ship time. ODP-TAMU had changed its operations schedule accordingly. The two days saved had been used to bring forward succeeding legs (benefiting those with ice-window requirements) rather than being added to any leg.

Francis explained that Leg 150 (NJ/MAT) Co-Chiefs were unhappy about getting only 40 days on site. Weather windows were tight, however, for subsequent high-latitude legs. Furthermore, water depths at sites MAT 1, 2 and 3 were probably too shallow for drilling with *JOIDES Resolution*. Austin stated that he had received a letter from Co-Chiefs expressing displeasure about on-site time, but he was reluctant to discuss the issue until Leg 150 sites had gone through PPSP review in October. There were serious safety questions regarding possible shallow gas. Francis added that ODP-TAMU would inform MMS about Leg 150 activities. ONR was interested in casing 2-3 Leg 150 holes for acoustic experiments.

ODP-TAMU was examining ice monitoring systems and supplies for an ice-support vessel for Leg 151 (NAAG-I). In response to a comment from Lancelot, Francis said that ODP-TAMU would need a contact for *R/V Astrolabe* (possible support vessel from France). A RFP for an ice-support vessel would be issued in November 1992, with final choice of vessel in January 1993.

Leg 152 (NARM volcanic I) might also be affected by ice (Appendix 3). Moving the leg forward by 2 days would help. Francis also hoped for a shorter-than-normal port call in Reykjavik (legs 151/152).

T. Janacek was new Manager of Information Services at ODP-TAMU. P. Blum was to be a new Staff Scientist, the second non-US Staff Scientist appointed in recent years. Co-Chief tallies, by country and by institution were shown (Appendix 3). Initial Reports up to Leg 137 had been published (Appendix 3). The Leg 138 report would be published within the next month. Leg 138 had been a heavy coring leg and would have a two-volume Initial Report with a CD-ROM including, among other things, color reflectance data. Scientific Results up to Leg 125 had been published, with the exception of Leg 123, which had been returned to the printer with an error. Austin reeminded Francis to defer discussion of equipment status to the engineering report later in the meeting.

Francis went on to report on results of the ODP-TAMU survey of core repository users requested by EXCOM. He characterized his report as preliminary. The final report would be distributed by mail in ~1 month. ODP-TAMU had circulated a questionnaire to JOIDES panel members and sample requesters. Response had been good, with 311 returned questionnaires (by the end of July) from 1129 sent out. Japan was an anomaly, because ODP-TAMU had not sent out enough questionnaires to Japan originally. More had now been sent. Personal inspection or sampling in repositories was felt to be important to their work by 75% of respondents. Existence of multiple repositories was not considered to have a large impact, but it was felt that it would impede more people than it assisted. Sedimentologists were more favorable to a European repository than were igneous petrologists.

In conclusion, Francis stated that it was not generally understood that ODP-TAMU rented repository space, paying for rent, refrigeration and staff. All cores could only be consolidated into a single repository if one institution would invest the required capital. There was some support for a European repository, but that depended on some European country making a repository available at a competitive price. ODP-TAMU would manage the repository. WCR was full. There would be space for 2 years of cores in ECR and GCR with the drillship in the Atlantic. It seemed unlikely that new space would become available in time to avoid some shuffling of cores, perhaps into inaccessible storage. Answers about a European or other repository were needed by the end of CY92.

Insufficient scientists, from all disciplines, were available for the ODP-TAMU geriatric core study to evaluate changing properties of cores with time. Volunteers were needed.

In response to a question from Jenkyns, Francis said that rust developed on drill pipe when it was not used for long periods. Leg 145 would not have re-coated drill pipe. That would be installed at the Victoria port call at the end of Leg 145. For the present, the only option was to run pigs through the pipe to clean rust.

WIRELINE LOGGING SERVICES

Goldberg reported that, since the April PCOM meeting, he had taken over from R. Anderson, who had stepped down as head of ODP-LDGO Wireline Logging Services.

Thirteen holes were successfully logged on legs 139-143. Four holes were logged on Leg 143 (A&G I, Appendix 4), including Hole 866A, the deepest hole drilled by ODP on a single leg (1743.6 mbsf). The Japanese magnetometer had been successfully run at Site 865 on Leg 143, but had flooded on Leg 144 (A&G II). Six holes had been logged on Leg 144, using SES when necessary. Logs had been important on legs 143 and 144, because recovery had been poor. The resistivity log from Hole 866A (Appendix 4) showed lithologic units and similar characteristics were seen in Leg 144 logs. Lithologic distinctions could be picked out on FMS logs (Appendix 4) and more would be seen (cyclicity, etc.) when data were fully processed. ODP-TAMU was moving to make FMS data available to scientists in real-time. Hole 873A (Leg 144) exhibited a lot of wash out. The caliper log must be used as a quality control on other logs (Appendix 4). Density and resistivity corresponded (both responded to porosity). Kicks in the Uranium log did not correspond to density and resistivity, though ordinarily they would if clay had been present. Uranium log kicks probably occurred at lithological boundaries.

Standard tools were planned for legs 145-148, plus the following tools on specific legs: Leg 145, French magnetometer/susceptibility tool; Leg 146, French magnetometer/susceptibility tool, GEOPROPS, BHTV and VSP; Leg 147, BHTV, VSP, possibly shear wave tool and flowmeter; Leg 148, French high-temperature temperature tool and cable, German high-temperature magnetometer, high-temperature BHTV, VSP and packer/flowmeter.

A Japex logging school held at the Yokohama port call (legs 144/145), on 21 July 1992, had attracted 86 attendees. The Leg 139 log data format for CD-ROM was to be presented to IHP in September 1992, with production to follow soon afterwards. Results of the log data survey had been tabulated and distributed to IHP. Results showed support for online log data and a uniform distribution of interest in making other types of data available online (Appendix 4). A pilot study for a database continued (both Geobase and Sybase examples). An informal review of Schlumberger operations (legs 133-144) was underway. ODP-LDGO laboratory and shipboard computing changes were under review. ODP-LDGO continued to change from Masscomp to Sun Sparc stations (Appendix 4) and was continuing its consultations with IMT, France and the University of Leicester, UK. ODP-LDGO planned to speed up processing of geochemical logs so that they could be incorporated into Initial Reports volumes. Personnel and structure changes at ODP-LDGO and staffing for legs 146-150 (85% complete) were listed (Appendix 4). ODP-LDGO was interviewing for the position of Chief Scientist.

Discussion

Dick felt that the informal review of Schlumberger operations on legs 133-144 should include polling of Co-Chiefs and Operations Managers. Goldberg stated that it currently involved only logging scientists. In response to a question from Taylor, Goldberg said that Schlumberger was switching to UNIX in conjunction with Maxis. Ideally, UNIX would also be used onboard *JOIDES Resolution*. ODP-LDGO wished to install Maxis onboard *JOIDES Resolution*, but that would be expensive. In addition, Maxis did not handle geochemical logs and ODP-LDGO did not wish to drop those.

Winterer asked whether ODP-LDGO had any control over who Schlumberger sent onboard *JOIDES Resolution*, adding that Leg 143 had had problems in that area. Goldberg replied that Schlumberger had stabilized the situation and were using two engineers who alternated, which thereby built experience. Austin stressed that PCOM's message was that ODP-LDGO consult Co-Chiefs as part of its review of Schlumberger operations.

In response to a question from Taylor, Goldberg said that, initially, FMS data would simply be available for display on shipboard Macintosh computers in real time. An analysis package would not be available.

Austin remarked that pending subcontracts with IMT and the University of Leicester could be viewed as an opening gambit on the part of ODP-LDGO for its DataNet proposal, and asked how they fit within a "zero-sum" budget. Goldberg replied that ODP-LDGO had cut 20% from the budget for such operations, enabling it to fit within the existing logging budget. In reply to a question from Lewis, Goldberg said that ODP-LDGO did not plan any other subcontracts. Austin asked whether ODP-LDGO would run logging as per current SOW through FY93. Pyle replied that JOI, Inc. had now received official notification that that would be the case.

960. JOIDES Reports by PCOM Liaisons / Chairs of Working Groups

EXCOM

Austin explained that EXCOM, which met twice/year, was the policy-making arm of the JOIDES structure. EXCOM had been dealing substantively with a number of issues. As a result, EXCOM's June 1992 meeting had been complex. EXCOM was now tackling some complicated issues in a responsible manner.

EXCOM had mandated a review of the JOIDES advisory structure. The Advisory Structure Review Committee would comprise B. Biju-Duval (France), H. Dürbaum (Germany, Chair), D. Eikelberg (Germany), L. Garrison (US), W. Hay (US), M. McNutt (US), R. Jarrard (US) and M. Salisbury (Canada). The review committee would begin its work at the December 1992 PCOM meeting and report to EXCOM at its June 1993 meeting at ODP-TAMU. One scenario proposed (by France) involved an extra layer between EXCOM and PCOM. The rationale was that PCOM was too involved with day-to-day running of the drillship and a "super PCOM" was required to address long-term scientific objectives.

EXCOM had approved the four-year Program Plan and had not been concerned with the concentration of ODP proposals in the Atlantic region, feeling it to represent a natural focusing. Discussion of the status of renewal was summarized in the Agenda Book (blue page 9). The outlook was generally positive, but there would probably be only 6 international partners. This would leave a budget gap affecting engineering initiatives, additional platforms and RFPs (pore-fluid sampling and deep drilling). Austin had mentioned existing Sedco sample bids for additional platforms for NJ/MAT and atoll drilling ($1.8M each) to EXCOM and had asked where the money might be obtained. EXCOM's view was that that was unknown, but that PCOM should continue to plan for such drilling anyway.

EXCOM had considered the mix of subcontractors for the second phase of ODP. PCOM had discussed the report of the EXCOM *ad hoc* Committee on Long-Term Organization and

Management of ODP (Briden Report) at its April 1992 meeting. Another EXCOM subcommittee, on subcontracting (Dorman Subcommittee), reported at the June 1992 EXCOM meeting. Increasing internationalization of ODP was of great concern. A RFP for routine logging was to be issued, with the subcontract to begin on 1 October 1993 (ODP-LDGO to be logging contractor until then). EXCOM advised separating out special logging operations (e.g., VSP, third-party tools), for which a separate RFP might be issued. Input from DMP was requested on establishing the dividing line between routine logging and special logging operations. Pyle added that the routine logging RFP would define basic logging operations, but that bidders were free to include extras. Austin commented that routine versus specialized logging functions had already been defined, but just needed to be spelled out. Pyle recalled that EXCOM had highlighted the lack of any parallel in logging to ODP-TAMU's engineering development program. Logging relied on third-party tools for technological development. EXCOM had identified that as a gap. Austin added that the Dorman Subcommittee had stated that all ODP engineering did not receive the same level of attention as science. As a result, the Dorman Subcommittee had proposed a "super TEDCOM" to provide a more formal approach to engineering. The Advisory Structure Review Committee would also examine engineering. Austin said that he had made the point to EXCOM that resources would be a problem. EXCOM had decided that the Site Survey Data Bank should not be bid, but should remain at LDGO. ODP-TAMU would remain the Science Operator for the first five years post-renewal (1993-1998). Some operations might be subcontracted with a view to internationalization (e.g., core repositories, computer upgrades), but ODP-TAMU would coordinate.

EXCOM decided that the JOIDES Office, following its two-years at the University of Washington, would move to an international site. JOI, Inc. was to produce a RFP. Responses, due by ~1 October 1992, would be reviewed and EXCOM would decide on the location of the JOIDES Office during FY95 and FY96 at its January 1993 meeting. Location of the JOIDES Office in FY97 and beyond was left open. EXCOM had encouraged ODP-TAMU to hire international staff.

EXCOM had not made a decision about core repositories, but a decision was urgently required. Mutter explained that ODP-LDGO's repository (ECR) was full, but that ODP-LDGO would expand it if the decision was made that the repository would remain there. It would help if some old cores could come out of refrigeration. Austin stated that ODP-TAMU and ODP-LDGO were prepared to enlarge their repositories, but they needed to know if they would be continuing their roles. Money was a problem. By 1995, repositories would be full. Therefore, firm decisions would be required soon. Some high-core-recovery legs were scheduled in the Atlantic. In response to a question from Taylor, Austin said that it would look good for ODP to internationalize repositories and EXCOM wanted that, but that no specific order had been given to particular owners to expand repository space. Francis stated that the minimum expansion of GCR at ODP-TAMU would cost $2M. Expansion could not begin until a decision had been made about location of the repository.

Austin commented that PCOM could make a statement to help move this issue along. Von Rad pointed out that many European scientists wanted to be able to examine cores before sampling them, without the cost of traveling to the US. There was, therefore, considerable interest in a European repository. Austin stressed that such a repository would have to be provided by one of the international partners. Francis stated that Germany (GEOMAR) and UK had expressed interest. Lancelot felt that if a RFP for a repository existed, those parties would bid. Pyle noted that ODP-TAMU had been asked to assess community views. Austin asked PCOM members to take the message back to interested parties that they should contact ODP-TAMU. In response to a question from von Rad, Francis said that WCR and ECR each cost ~$200,000/year. Arculus stated that Australia had assumed the process to be ongoing, with no decision yet made to

internationalize repositories. Austin responded that there was little time available (two years) for new bidding, if that was needed.

Mutter asked whether GEOMAR would have space for all Atlantic cores, or just those collected near Europe. There was interest in keeping all Atlantic cores together and the cost of transporting existing cores would be high. Pyle recalled that IHP had previously dealt with the issue of moving cores and had been against it. Winterer explained that space was available at WCR in the original core storage area. WCR was not, therefore, technically full. Francis responded that the part rented by ODP-TAMU was, however, full. Berger characterized the status of action on the repository issue as "RFP by rumor". Austin responded that he had put the issue on the agenda for that reason. PCOM needed to make a statement. In reply to a question from Lewis, Francis said that a European repository would be managed by ODP-TAMU, which would also pay operating costs. Lewis asked whether PCOM should encourage a European repository. Austin answered that it would have to be made clear whether only new cores would be involved, or all existing cores, adding that LDGO might want its ECR space back. Lewis felt that PCOM should be more proactive on this issue. Dick felt that having only new cores at a European repository would be unacceptable. Repositories should be regional. Winterer countered that the issue of moving cores had been examined previously and it had been decided that it was wisest to leave old cores where they were to avoid damage to cores. Perhaps the issue could be revisited. Taylor pointed out that Pacific and Indian ocean cores were already divided between two repositories.

In response to a question from Pyle, Francis said that ODP-TAMU would send its final report on its core repository survey to PCOM, EXCOM, JOI, Inc. and NSF by mail. Pyle asked whether, therefore, PCOM should return to the issue at its December 1992 meeting. Austin felt that PCOM should comment now, though the minutes might be sufficient to reflect PCOM's view. Lancelot noted that there was some movement in Europe, e.g., GEOMAR's interest. PCOM had to act. In addition, the idea of moving some cores from refrigeration at ODP-LDGO changed the issue. Finances, transportation, etc. should be examined. EXCOM should charge PCOM to examine the matter. Austin responded that EXCOM had tossed the issue back to ODP-TAMU. International PCOM members should have interested parties contact ODP-TAMU. PCOM could not discuss transporting cores until it had all of the options before it. It might be that some space was available in existing repositories and that the urgency was not as great as he had feared. On the other hand, urgent action might be necessary. He asked whether PCOM needed to make a statement. Lewis felt that interest in repositories should be channeled through ODP-TAMU, since it was charged with managing repositories. Austin agreed. Francis noted that EXCOM's motion on repositories had emphasized "least cost" options for expanding repositories. That would require bidding. Berger cautioned against calling for general bids when the final recommendation of the survey on repositories might yet be against internationalization. Austin countered that preliminary survey results had shown the community not to be strongly inclined either way. That would not control the issue. A PCOM motion would encourage ODP-TAMU. Francis noted that ODP-TAMU needed advice from JOI, Inc. and NSF. ODP-TAMU had been told that the cores were US Government property.

Delaney defined the key issues as space, internationalization, quality of cores and cost. Input from interested parties could be requested. Pyle added that any RFP could specify that a final decision would be made pending availability of funds and resolution of issues. Interested parties could then take the risk of bidding if they wished. Austin urged awareness of potential effects on existing repositories. Lancelot felt that EXCOM must be pushed to say something concrete, but that January 1993 might be too late. Austin said that both low cost and internationalization were important to EXCOM. Lancelot asked whether PCOM could at least endorse scientific aspects. Austin added that PCOM would also encourage interested parties to

contact ODP-TAMU. In response to a question from Taylor, Austin said that EXCOM's intention had not been to eliminate or penalize existing repositories, but to expand and internationalize. Von Rad asked whether only new cores would be involved. Austin replied that that would be up to the interested parties. PCOM would return to the issue at its December 1992 meeting and provide input for EXCOM's January 1993 meeting. Larsen felt that GEOMAR should state whether its interest in hosting a repository was associated with any particular ODP scientific programs. Austin stressed that all interested parties must be aware that repositories were long-term and not leg-specific.

In response to a question from Taylor, Austin said that PCOM should express support for the process, not specific requirements. Jenkyns agreed that PCOM's motion should not be specific. Mutter said that the goal was to get potential bidders out of the "hearsay network" and into the open. He asked whether the issue of transportation of old cores would require a second motion. Austin replied that the minutes would reflect that that had been discussed. ODP-TAMU would deal with it. Taylor expressed the opinion that, unless someone offered to take the old cores, there was no need to study transportation. Mutter countered that the issue would be negated if safe transportation was impossible. Austin stated that bidders should be aware of the possibility. Pyle agreed that it should be left unwritten, because EXCOM had not expressed a strong interest in moving cores and, in addition, IHP's past study had recommended against it. Lancelot felt that it was up to ODP-TAMU to look into transportation of cores, since curation was their job. PCOM passed the following motion.

PCOM Motion

In order to help ODP-TAMU provide JOI, Inc. and PCOM with least-cost procedures/policy for expanding quality core repository facilities, which will be discussed at the December 1992 PCOM meeting, PCOM requests its member institutions, and especially international partners, to provide ODP-TAMU with information on their interest and ability to host such facilities.
Motion Taylor, second Malpas Vote: for 15; against 2; abstain 0; absent 0

Austin concluded his EXCOM report by recalling that Lewis, Langseth and Malpas had written to A. Maxwell (EXCOM Chair), following the April 1992 PCOM meeting, objecting to EXCOM's lack of consultation with PCOM prior to acting on the Briden Report (Agenda Book, white pages 357-358). The EXCOM Chair's response was included in the Agenda Book (white pages 355-356). EXCOM assured PCOM that it would remain involved and be consulted on all aspects. EXCOM had reiterated that view often during its June 1992 meeting. Lewis noted that EXCOM had recommended that DMP recommend procedures for implementing a rigorous borehole development group. That appeared to circumvent PCOM. Austin responded that the view had been that the PCOM Chair would approach DMP so that the matter would cycle through PCOM.

DMP

Becker reported that DMP had met at the KTB drilling site in Windischeschenbach, Germany, for the second time. There had been a useful exchange of ideas. He referred to the executive summary (Agenda Book, white pages 73-74).

DMP had sent a draft revised version of the *ODP Guidelines for the Development and Deployment of Third-Party Tools* to PCOM's April 1992 meeting. DMP approved PCOM's revised wording and the guidelines would be published in the *JOIDES Journal.* The guidelines should be applied to the BGR high-temperature magnetometer and CSM/LDGO high-temperature resistivity tool. Experience gained from these test cases would be used to revise the

guidelines further, if necessary. Becker noted that some proposed logging operations on Leg 148 fell outside the guidelines.

PCOM had not come to a firm conclusion about the pore-fluid sampling RFP at its April 1992 meeting. No go-ahead for issuing the RFP had been given. The Steering Group for *In-Situ* Pore-Fluid Sampling wanted a RFP issued, with the proviso that it would depend on availability of funds, and members were upset that that could not be done. Austin commented that PCOM's view at its April 1992 meeting had been that funds were not available and PCOM had, therefore, delayed action. The issue was, therefore, on the agenda for this meeting. PCOM needed to decide whether there was any possibility of funding such an RFP. Becker noted that the pore-fluid steering group had specified only pore-fluid sampling. DMP had added determination or monitoring of pore fluid pressure and permeability as secondary priorities.

Becker referred to DMP's Recommendation 92/6 (Agenda Book, white page 73) concerning peripheral downhole measurements (e.g., offset VSP) on Leg 148 (Hole 504B) and comments on the same subject in the letter from P. Worthington to Austin (Agenda Book, Leg 148 white pages 18-19). Recommendation 92/6 stated that such peripheral work should be deferred until after the hole had reached its target depth. However, because DMP had not been provided with copies of specific proposals before its meeting, DMP had been unable to express support for particular experiments/measurements. DMP felt that there should be no repeat logging of intervals logged in the past.

Becker suggested that DMP Recommendation 92/7 (Agenda Book, white page 73) contained an error and that "CORKs" should replace "return to 504B".

The public information brochure on ODP downhole measurements was scheduled for publication in late summer 1992.

In the area of high-temperature tool development, good progress was being made on the CSM/LDGO high-temperature resistivity tool. DOE funds for building a high-temperature borehole fluid sampler would be available from 1 October 1992. Sample requirements had been specified by an *ad hoc* JOI, Inc. committee chaired by J. Edmond (MIT). The high-temperature temperature tool and cablehead were robust and deliberately over designed. The high-temperature cable was, therefore, the primary test target. Testing awaited identification of a suitable site. DMP also heard a report on progress toward developing a high-temperature gamma spectral tool.

Becker reported that no mention had been made of the Von Herzen et al. tool for testing on Leg 148.

Austin noted that Worthington would chair DMP to the end of 1992 and would stay on DMP for a year beyond that.

TEDCOM

Becker referred to the executive summary in the Agenda Book (white pages 137-138). TEDCOM had reviewed the results of Leg 142 and recommended that work on DCS should continue, because the technical problems should be solvable. Among other recommendations, TEDCOM identified the need for a computer simulation study of DCS and supported hiring H. Shatto (a TEDCOM member) as a paid consultant to assist in that study. TEDCOM recognized that that was a potentially controversial move, but had been impressed with Shatto's expertise. Storms confirmed that Shatto was involved. Pyle expressed concern about hiring a TEDCOM member. Taylor recalled that the TEDCOM Chair had asked PCOM, at its December 1991

meeting, whether he could hire a TEDCOM member and PCOM had given permission. Austin stated that JOIDES panel members were unpaid, but that there was nothing in writing prohibiting hiring of a panel member. Lewis said that C. Sparks (TEDCOM Chair) had made a point of saying that he had been empowered to hire TEDCOM members. Francis pointed out that ODP-TAMU did the hiring, since panels had no budget. Austin stated that it was up to ODP-TAMU to identify subcontracting help. That might involve a panel member, unless it inhibited that panel's advice to PCOM.

Becker noted that TEDCOM's other recommendations on DCS were listed in TEDCOM's executive summary. He highlighted study of Russian retractable bit technology.

TEDCOM recommended that sites for a deep drilling study be reduced to the LITHP hole and TECP hole GI-A. Study of those holes should be obligatory and not optional. A literature search on deep drilling should be performed by ODP-TAMU on MOHO/OMDP documents. The document *Engineering for Deep Sea Drilling for Scientific Purposes* should be distributed to PCOM, thematic panel chairs and TEDCOM members. Realistic specifications/well programs for the LITHP/TECP deep holes should be defined by a small working group (comprising ODP-TAMU, TEDCOM, LITHP/TECP) at the next TEDCOM meeting. The deep drilling RFP must also be revised and a clear summary of objectives added.

Discussion

Austin pointed out that PCOM would address the question of how to proceed with the deep drilling RFP later in the meeting. ODP-TAMU had said that a RFP might not be necessary if Leg 149 (NARM non-volcanic-I) involved drilling a single deep hole (IAP-1). PCOM must first decide on Leg 149. Francis noted that there was a major difference between IAP-1 and the deep LITHP hole. Austin agreed, but added that the LITHP deep hole was far in the future.

Becker commented that this had been the first TEDCOM meeting that he had attended. He had been impressed. TEDCOM was proactive and intended to meet more often. Austin noted that the Advisory Structure Review Committee would be looking at TEDCOM, as EXCOM wanted to see engineering be a more important part of ODP. Lewis stressed the need to be specific in the deep drilling RFP. Austin responded that thematic panels had been asked to produce candidate sites. Lewis said that TEDCOM had found that some of the research had already been done and that it was just a matter of looking it up. Austin cautioned that ODP-TAMU might have insufficient personnel, adding that it might be necessary to authorize resources to hire a consultant.

Von Rad expressed concern about conflict of interest if a panel defined a study and specified that it must be carried out by a panel member as a consultant. It was setting a bad precedent. Pyle felt that Panel Chairs should be told to be sensitive. The TEDCOM minutes stated that a TEDCOM member (Shatto) should be hired. It was up to ODP-TAMU, however, to do the hiring. Austin said that PCOM could instruct TEDCOM to change its draft minutes. In response to a question from Ambos, Storms said that the contract involved <$10,000 for effort beyond that normally expended by a panel member. Austin emphasized that Shatto's input on DCS had been very useful.

OFFSET DRILLING WORKING GROUP

Austin explained that PCOM must decide whether to thank and disband OD-WG and accept its report, or decide to modify its mandate and have it do more work. He introduced Vine (OD-WG Chair).

Vine thanked Austin for the opportunity to chair OD-WG. He began by addressing the need for OD-WG. The idea was to drill a series of offset sections, starting at different stratigraphic levels, to build up a composite profile of the lower crust and upper mantle. An example was provided by Vema Fracture Zone, where the section was exposed on the walls of a fracture zone on the sides of a transverse ridge. Transverse ridges were first-order features of the ocean floor, whose uplift mechanisms were poorly understood. Uplift could be great enough to result in wave-cut platforms. At Atlantis II, exposure of tectonic units on such a wave-cut platform were particularly suited to drilling. Attitudes of transitions between layers tended, however, to be uncertain at many potential offset drilling sites. That was significant because dip of those layers influenced number of holes required. The Moho was also an issue. Petrologic Moho was defined by ultramafic cumulates above and peridotites below. Seismic Moho could correspond to the petrologic Moho if the latter coincided with a serpentinization front (with the cumulates serpentinized). That would, however, be fortuitous. More typically, the seismic Moho was placed at the mafic/ultramafic contact. That would provide sufficient seismic contrast, if the uppermost ultramafics were not serpentinized. The latter, however, was a real possibility. If uppermost ultramafics were serpentinized, it would be almost anybody's guess where that seismic Moho was in relation to the various lithologies. These points emphasized the current lack of detailed knowledge of the lower oceanic crust and, in particular, the Moho.

Drilling of the Troodos Ophiolite was difficult in shallower parts of the section, as it was for ODP (because of fault zones, fractures, alteration, etc.), and yielded its best results in lower parts of the section (as in Hole 735B). The Layer 2/3 boundary appeared to be less a lithologic boundary and more related to porosity, etc. Seismic velocity was mostly a function of porosity, alteration and fracturing; it was difficult to relate seismic and lithologic (ophiolite) models. The hole in the plutonic section of Troodos Ophiolite was close to an inferred transform fault zone. In the oceans proper, it had been shown that the mafic section thinned toward fracture zones and seismics indicated, in addition, a seismic Moho at greater depth and a presumed region of serpentinization within the vicinity of the thinned mafic crust. At a place like Vema, therefore, drilling into (uplifted) ultramafics might simply encounter serpentinized crust of ultramafics. Seismic Moho might be at greater depth. This potential problem of serpentinized lower crust as defined seismically, rather than petrologically, could be a general feature of tectonic windows targeted by an offset drilling program. It was possible that the seismic Moho in "typical" oceanic crust might not be accessible anywhere by offset drilling (i.e., within 1000-1500 mbsf). So far, no such site had been identified. That constituted the one major disadvantage of offset drilling relative to a single deep hole in an untectonized area. Geophysicists might, therefore, never be satisfied with offset drilling.

Ridge segmentation implied great lateral heterogeneity. Proximity to plumes created further variability.

Most ophiolites formed above subduction zones. Their lava geochemistries differed from those of MORB and their ultramafic cumulates had higher volatile contents. The first offset drilling, therefore, should be in one of the main ocean basins in order to test the ophiolite analogy, and not in a back-arc basin. If main ocean basin crust was found to differ from ophiolites, a back-arc basin might be targeted later.

Objectives of offset drilling in a main ocean basin were: 1) to obtain composite sections of crust formed at fast and slow spreading centers, and 2) to constrain variability in crust and upper mantle. The strategy involved 8-10 years, 10-12 legs and 15-18 holes (to 500-1500 mbsf). Legs would be allocated as follows: 4 legs in fast-spreading crust; 6 legs in slow-spreading crust, including an array to define lateral variation (more complex than fast-spreading crust); 2 legs to drill near-plume crustal sections. Slow-spreading crust legs would investigate the median valley master fault hypothesis and emplacement of serpentinite diapirs.

Site survey requirements included a three-dimensional picture of the geology. At minimum, a geological map of the area was required. Magnetics were needed to define age and kinematic setting. Regional crustal structure should be defined and extrapolation to drill site (using, e.g., MCS, seismic refraction, sonar, gravity). Proposals should contain syntheses of data into maps and balanced cross-sections, though it might not always be possible to produce the latter. As an alternative, more than one possibility could be presented. Model testing was the key. Models would be modified as drilling proceeded.

No major new technical developments would be required. HRB might require some modification to allow drilling on steep slopes, but DCS was not required.

Initially, OD-WG identified 22 tectonic windows as potential target areas (Agenda Book, white pages 227-228). These were reduced to a short-list of 8. The short list reflected the amount of existing site-survey data and comprised the following targets (Agenda Book, white page 228). Rifted crust: Hess Deep, Pito Deep, Kings Trough. Transverse ridge and fracture zone: Atlantis II, Vema, Oceanographer. Median valley master faults: MARK, 15°20' N (MAR). Characteristics of each of these locations were described in the OD-WG report (Agenda Book, white pages 228-235).

In conclusion, offset drilling had tremendous potential and could answer some first-order questions, in particular about lateral variability. Offset drilling had some disadvantages with respect to a single deep hole. OD-WG's final recommendation was that a DPG be established in early 1993 to define a specific program of offset drilling, taking into account results of legs 147 (HD) and 148 (504B).

Discussion

Austin thanked Vine for chairing OD-WG. Von Rad noted that a DPG would need a geographic area on which to focus. Vine responded that it would concentrate on the short list of 8 locations and would focus further as additional data were obtained. Austin pointed out that a DPG required highly-ranked proposals, adding that not all of the short-listed locations had proposals associated with them. Larsen asked whether OD-WG considered ultra-slow and oblique-spreading ridges. Vine replied that Atlantis II was ultra-slow. Dick, responding to von Rad's comment, felt that problems addressed by offset drilling were global. A basket of proposals existed and a DPG would fight out where to concentrate effort. Austin reiterated that DPGs were not established until a group of highly-ranked proposals existed, adding that OD-WG seemed to be proposing a standing WG. Malpas felt that some action was necessary, and PCOM should not get tied up with the semantics of DPG versus WG. Mutter added that proposals existed, some of which were highly ranked. Austin felt that proposals in hand provided thematic panels with enough information, but that a time might come when there were too many proposals for thematic panels to handle. He asked whether PCOM should act now or defer action, noting that ODP was making a start on offset drilling at HD (Leg 147). Much would depend on which proposals were included in the FY94 Prospectus. Mutter stressed that PCOM should avoid falling into the trap of being unable to make decisions until another group had reported. Any DPG would be too late to influence FY94 planning. Austin pointed out that OD-WG had already influenced FY93 (e.g., MARK proposal). Dick felt that a DPG was required to consider slow-spreading ridges. Austin reminded Dick that he was a proponent. PCOM would decide what went into the FY94 Prospectus and must act on panel rankings. Taylor thought that PCOM must await LITHP's reaction to the OD-WG report to see whether LITHP saw the need for a DPG. Austin agreed. For the present, PCOM needed only to decide whether to keep OD-WG active until after fall panel meetings.

SEA-LEVEL WORKING GROUP

Austin introduced Loutit (SL-WG substitute Chair). Loutit explained that P. Crevello (SL-WG Chair) would normally have presented the SL-WG report, but had been assigned to Tunisia by his employer, Marathon Oil Co.

SL-WG's mission had been to formulate a global strategy for: 1) estimation of timing, magnitude and rate of eustatic change; 2) defining stratigraphic response to eustasy; and 3) determining mechanisms for eustatic change. SL-WG had met three times. The first meeting was confusing, but served to get SL-WG members on the same wavelength. The third meeting produced the final report.

Loutit outlined key recommendations. SL-WG recommended establishment of a "sea-level program" to oversee coordination of sea-level research within ODP. Better integration of sea-level research was essential. Sea-level research within ODP was currently split between SGPP and OHP. It should be better coordinated. SL-WG defined a drilling strategy for sea-level objectives and recognized the need to elicit more sea-level proposals. Shallow-water drilling and sediment recovery problems were highlighted. An integrated stratigraphic analysis system for integration of seismic, core and log data was needed, as was establishment of a data/information management system for stratigraphic events and chronostratigraphic studies (both shipboard and onshore) to enhance distribution of data/information to sea-level researchers.

SL-WG agreed that *JOIDES Resolution* was the best tool for sea-level studies. It linked deep-ocean studies (e.g., $\partial^{18}O$) to shallow margin studies and allowed targeting of depositional sequences on margins, etc., and links to outcrop work. SL-WG's strategy was to concentrate initially on time periods for which most was known, e.g., the Neogene, where sea-level proxies were available. Leg 150 (NJ/MAT) was a starting point. In the short term, a strategy would be set up dependent on Leg 150 results. A group should be set up to consider strategy after Leg 150. ODP should then drill, e.g., the Bahamas—time equivalent to NJ/MAT, but with different lithology (carbonate versus siliciclastic). If synchroneity were established by those legs, ODP should drill more distant sites, e.g., New Zealand, Australia, for which proposals existed. The strategy might be changed based on early results. The need to study stratigraphic response could be addressed by drilling at a different location on the same margin as NJ/MAT. Loutit re-emphasized that a group was needed to consider results as they were obtained. The idea was that SL-WG's report not remain a static document, but be revised continuously. Appendices could be updated as more information on various margins became available. Proponents should be enticed to submit proposals for each area.

Drilling of transects was an essential element of SL-WG's strategy. Transects should be on sedimentary packages related to major second-order transgressions and regressions, which produce prograding geometries. Locations should generally have good outcrop expression and sedimentary geometries and, where possible, be coupled to the deep ocean. Demonstrable chronologic control was necessary. It was important to work with industry to get a data grid interpreted. Subsequently, a MCS survey should be conducted, paying great attention to acquisition.

One of the major technical issues was the necessity for supplemental platforms for shallow-water drilling. The transect approach required links between outer shelf and onshore. Proponents would have to find their own funding for such platforms. A further technical issue involved sediment recovery, particularly of sand and alternating hard and soft lithologies (the latter perhaps requiring DCS). Stratigraphic analysis tools were required onboard *JOIDES Resolution* so that site locations could be selected and changed as more was learned while legs

were in progress. Better integration of chronologic data was required and biostratigraphic data should be graphically displayed (time-distance grid).

Loutit concluded by noting that a shortened version of the SL-WG report would be published in the *JOIDES Journal.* BMR (Loutit's new employer) might publish the entire report.

Discussion

Watkins thanked Loutit for his SL-WG work. After Crevello was assigned to Tunisia, Loutit had taken over in the midst of a job change of his own. Taylor asked how much the problem of sand recovery compromised the generic approach. Loutit replied that it depended on the objective. For the initial objective of timing of events, sand recovery was not critical, since shales gave age control and logs could be used to piece together the rest of the section. For stratigraphic response, sand recovery was more important, but that was in the future. Taira asked what new technology might be required to ensure high recovery in the Bahamas. Loutit noted that high recovery had been obtained by DCS drilling from a jack-up on the bank top. DCS on *JOIDES Resolution* was critical for the deeper-water section. New technology was not needed, but existing technology must be made to work. DCS was known to obtain 80%-90% recovery of shallow-water carbonates from a fixed platform. Taylor asked whether, if DCS was used in the Bahamas, the slimhole logging suite would be adequate. Loutit answered that sea-level studies did not require a fancy suite.

Larsen noted that sea level was a preexisting area of research outside ODP. He felt that where ODP could play a role should be stressed. Loutit said that ODP's role was unique. Industry did not target discrete intervals where age control could be obtained. Larsen stated that NARM drilling also relied on transects, but that SL-WG did not mention possible overlap. Loutit explained that tacking sea-level objectives onto other programs did not work. Dedicated legs were required. Austin pointed out that it would be just as valid to state that the NARM-DPG report had not paid sufficient attention to sediments. In response to a question from Goldberg, Loutit said that the resolution of standard logging tools was adequate. Responding to Larsen's point about pre-existing sea-level studies, Watkins explained that, though sea-level studies were common, much was taken on faith. It was not clear that events were truly eustatic and mechanisms were uncertain. ODP could try to resolve these problems.

Von Rad praised SL-WG for providing concrete criteria to thematic panels in its report. Austin agreed that that had been a primary goal. In response to a question from Taira, Loutit said that the transect approach addressed tying of onshore exposures to offshore sections. It was important to advertise to the community to get more suggestions for potential locations. Austin noted that PCOM would return to the issue of the future life of SL-WG and OD-WG later in the meeting.

961. Reports of Co-Chairs (or Representatives) of Liaison Groups I

Austin explained that most groups (FDSN, IGBP/GSGP, JGOFS) had submitted written reports (Agenda Book, blue pages 12-17). Brass would present a report on NADP on Thursday. Austin introduced Delaney to present the InterRIDGE report.

INTERRIDGE

Delaney showed two videos, illustrating use of ROVs at mid-ocean ridges, both within the last 12 months, one within only the last month. He felt that science was on the threshold of new approaches to deep-sea research. Ridge systems generated 60% of the planet. Ridges were a

focus of research because they were simple, dynamic, "do-able" and interdisciplinary. The scale of studies ranged from that of bacteria (of particular interest to the genetic engineering industry) to that of continental motion. RIDGE was interested in generation of oceanic crust and upper lithosphere. This involved a whole series of spatially-nested problems. One of the most important was the megaplume concept. Submarine volcanoes were as intermittent and transient as land volcanoes. For example, there seemed to have been at least two large bursts of energy given off by the submarine volcanic system of Juan de Fuca Ridge. Regarding bacterial studies, Delaney explained that bacteria were primary producers. One estimate was that the total biomass in the crust and upper mantle was greater than that on the surface.

InterRIDGE was an effort to pull together groups, interested in ridges, from different countries. The purpose was to discover interrelationships in ridge-crest processes. InterRIDGE began in 1989. At least five countries would be involved. Key elements of InterRIDGE were: the Steering Group, working group chairs, national representatives and liaisons. The InterRIDGE Office would probably move to UK or France (and move every 3 years). Working groups existed for: Global Studies, Meso-Scale Studies and Studies of Active Processes (a fast-response team existed to respond to activity taking place on the seafloor). The InterRIDGE Office comprised two people (currently Delaney and T. Stroh). Funding was at ~$140,000/year, so far entirely from the US RIDGE program, but soon to be international. InterRIDGE would be recognized as a SCOR (Scientific Committee on Ocean Research) working group. The RIDGE Office had moved to WHOI. Delaney had copies of *Ridge Events*, *InterRIDGE News* and the meeting report from InterRIDGE's 11-13 March 1992 meeting in York, UK available for PCOM members.

Delaney moved on to address how ODP and InterRIDGE could interact. 1) On- and off-axis drilling. EPR-DPG had recommended drilling both along and across the ridge axis to evaluate spatial and temporal variability. ODP could investigate the rock record and sediment stratigraphy (using HPC), conduct experiments and instrument arrays of holes. 2) RIDGE/InterRIDGE were interested in lower crust/upper mantle drilling (by offset drilling or a single deep hole). 3) Young, upper crustal sections: DCS was very important to RIDGE/InterRIDGE. 4) RIDGE/InterRIDGE strongly endorsed such additional issues as OSN, use of subsea cables for research, MAST activities (European Community funds available). 5) Active hydrothermal systems/seafloor observatory. At present, it was possible to map well, but temporal variability was crucial. The whole process was a series of connected feedback loops. Good maps were required from SeaMARC II to 1 m resolution. Pools of hot (375°C) water observed under overhangs might also exist in the subsurface and megaplumes might originate when fracturing released such fluids. Drilling will certainly encounter boiling fluids. ODP should never again drill into an active system without performing a temporal study, by instrumenting the site 6 months in advance of drilling, in addition to thorough mapping and post-drilling studies to evaluate response of the system to drilling. If ODP could work, within the next six years, with a group looking at the water column above ridge crests, it would be possible to examine ridge crests thoroughly and make real progress.

Discussion

Ambos noted that the timetable for phasing in an ODP liaison was 1995-1996. Delaney responded that, if the matter was delayed until 1996, nothing would happen until 2000. He stressed that it could be done now and recommended that ODP form a working group to bring together ODP and water column groups in order to define what happened when a hole was drilled in a hydrothermal system. Tools used by both groups were the same; ODP just put those tools in holes. Lancelot highlighted a strong European effort along those lines, which should be coordinated with InterRIDGE.

Francis pointed out that one capability provided by *JOIDES Resolution* was that it could deploy heavy objects and transmit much higher power than by electrical means. Delaney agreed that power was an issue. In response to a question from Berger, Delaney said that there was no tidal component to flow in the subsurface. Mutter suggested that PCOM discuss interfacing with InterRIDGE as a New Business item. Austin agreed.

962. Engineering Reports

Austin explained that PCOM would hear about progress on prioritized engineering items. In April 1992, PCOM prioritized system and leg-specific developments (Agenda Book, white page 39). PCOM also asked JOI, Inc. to purchase items on a short-list of non-engineering items as funds became available.

SCIENCE OPERATOR

Engineering Priorities

Storms explained that he would return later to DCS, the first priority. Next came engineering developments for core-log integration. The Tensor tool (magnetic core orientation) was an electronic version of the multi-shot tool for APC. A second Tensor tool had been ordered for September 1992 and would be available for deployment on Leg 146 or 147. Revision of operating software was in progress. The goal was to improve the software's data-reporting capability, making it simpler and quicker to produce output, either for direct analysis or for importation into other software. The original tool was aboard *JOIDES Resolution* for Leg 145 and was being used for APC core orientation. To date, the Tensor tool had been used successfully on three holes with good correlation to tandem multi-shot readings.

Sonic Core Monitor (SCM) was another item required for core-log integration. Problems experienced with the second SCM tool had been identified as a faulty filter circuit in the core-height logger electronics. This lowered the tool's upper gain limit. The automatic gain control circuit was unable to set the gain above that limit. The problem would be corrected by the manufacturer in time for tool availability for Leg 146. Minor software difficulties experienced during Leg 143 had been corrected. New software, together with the first SCM tool, were presently aboard *JOIDES Resolution* for use on Leg 145.

Hard Rock Orientation (HRO) used Tensor tool, SCM and some additional mechanical features to ensure that the core barrel would not rotate, together with a scribing system. Redesign of the HRO latch to remove residual barrel rotation was nearing completion. The latch would contain corrosion-resistant bearings, designed in-house, which would allow removal of grease seals, thus greatly reducing rotational drag on the core barrel. A non-magnetic bearing was also under design for use in the sinker bar assembly to further reduce BHA drag effects. Next projected deployment of this system would be Leg 147 (HD). Another element of HRO, the TOTCO rig instrumentation system, was largely on hold, primarily because of concentration on DCS and also because it was initially an internal ODP-TAMU initiative. Now, however, PCOM and the scientific community were interested in rig instrumentation, so this system had been moved up in status.

The third priority was deep drilling system/capability. Storms outlined the status of operational planning. The final operational plan for Leg 149 (assumed to be IAP-1 deep hole) had been prepared, along with a draft operating plan for Newfoundland Basin (NB-4A). Preparation continued of a deep drilling RFQ for review by TEDCOM in October. A review was in progress of a 1980 NRC report entitled *Engineering for Deep Sea Drilling for Scientific Purposes*. Moving on to the status of deep-drilling hardware, ODP-TAMU hoped that the

DRIL-QUIP casing system (used in the oil industry, Appendix 5) would ultimately replace all current casing running and hanger systems. It would enable deployment of 2, 3 or 4 casing strings and would be important for deep-penetration drilling. A modified version would be used on Leg 147. Storms outlined the Haliburton subsea release (SSR) system, under development for use in stingerless cementing operations. The SSR system would reduce drill string payload (a problem for deeper holes and long casing strings) by eliminating the need to run drill pipe to the bottom of long casing strings during deployment/cementing and also conserve shipboard operating time by eliminating time-consuming space-out operation with slip joints and/or bumper subs required for the current system. Should casing cementing be required on Leg 147, the SSR system would also be available for evaluation.

Fourth priority was improvements in existing coring techniques. Using the already-established APC wash-over technique, a new APC depth record was established on Leg 145 (398.3 mbsf at Hole 882A, DSM-3). Work was continuing on XCB flow control. Design changes had been made to correct deficiencies identified during Leg 141 operations, including low core recovery (washing effects?) and bit-sub erosion. Changes included alterations to allow for proper operation at lower flow rates and a hard shroud for erosion protection. New computer simulation studies had verified new design performance improvements. The XCB flow control system was fully interchangeable with the standard XCB system, allowing totally non-intrusive sea trials testing. Modified XCB flow control anti-clog valve assemblies would be available for continued evaluation on Leg 146.

VPC was the leg-specific development required for legs 146 and 150. Both existing VPC tools had been fully refurbished and would be available for use on Leg 146. Existing vibration units had been refurbished, enhanced corrosion protection added to critical surfaces and micro-stabilizers added to aid in prevention of jamming. A computer model of the Novatech vibrating unit had been constructed by a third-party investigator. The computer model would be refined and used to optimize VPC operating parameters during Leg 146. During Leg 146 operations, the model would be expanded to encompass the entire BHA. After Leg 146, the analytical model, coupled with at-sea operating data, would be used to refine VPC hardware design for Leg 150 operations.

The GEOPROPS Probe (Appendix 5) was designed for deployment in an MDCB pre-drilled pilot hole, drilled 10 ft ahead of the drill string (MDCB was working well). The probe was designed to measure formation pressure and temperature and to take fluid samples. Final laboratory testing of the modified tool was scheduled to take place in Salt Lake City in mid-August 1992. Modifications involved: 1) new spring-actuated sequence valve, eliminating most of the previously unreliable shear pin mechanisms; 2) fluid sample bottles modified with high-pressure, quick-release couplings for ease of removal; 3) fluid sampling bottles and related hardware placed in their own interior housing for easier sample removal; 4) fabrication materials changed to corrosion-resistant variety; 5) self-aligning bulkheads incorporated to provide for positive connector make-up; and 6) a shock sub designed for placement immediately above the GEOPROPS Probe to reduce shock loads encountered during freefall deployment and landing. In response to a question from Lancelot, Storms said that WOB would be maintained while GEOPROPS was deployed and it would, therefore, be stable.

Equipment Status Report

Francis presented the non-engineering equipment status report (Appendix 5). Loutit asked why the seismic workstation (under evaluation—need to integrate with database upgrade) was considered separate from core-log integration. A core-log integration workstation had already been acquired. Why not simply install seismic analysis software on that workstation? Austin replied that the list had been generated by the panels. He agreed that the seismic workstation should not be linked to the database upgrade, nor should real-time navigation be so linked.

Winterer noted that it had been necessary to lock up Sun workstations immediately after use as a US Government security requirement while Russian scientists were aboard during Leg 143. Francis responded that that was a surmountable problem.

Austin recalled that PCOM, at its April 1992 meeting, had directed JOI, Inc. to purchase items as funds became available. Pyle agreed that there was no need for further comment.

DCS

Austin explained that ODP-TAMU had produced a report on the status of DCS (available as a handout) as a basis for decisions about the future of DCS. He reminded PCOM that it would be discussing other expensive items at this meeting, in addition to DCS.

Storms reported that ODP-TAMU had initiated two independent studies of DCS, by Stress Engineering Services, Inc. and Paul-Munroe Engineering International. Both reports were due in the first week of October 1992. Preliminary reports had stated that the existing DCS configuration constituted a viable approach and should be retained. Primary reason for failure of the secondary heave compensation system on Leg 142 was a bent DCS cylinder (Appendix 5). Load swings of up to 6000 lb due to increased cylinder friction made compensation virtually impossible. Nonlinear friction of the bent cylinder would require nonlinear gain factors in closed-loop WOB control, which was not technically possible. Results of cylinder testing confirmed observations on Leg 142: inconsistent load cell readings, instability, no WOB control and system response at twice heave frequency.

The present control system scheme was based on over-optimistic assumptions and was not as powerful, flexible or adaptable as it could be. Previous models developed for DCS were over-simplified and could be improved and made more realistic. Storms said that this had been ODP-TAMU's fault. Previous simulation efforts failed to analyze transient response and other critical events. More realistic simulations should be performed with alternate control schemes and sensors. Better, more powerful control schemes could be implemented and would offer much greater capability and flexibility. Data acquisition, in real time, should be made a part of the controller hardware. Improvements to other existing systems should be considered and would yield benefits: 1) servo valve improvements and 2) low-friction seal design for the primary heave compensator. ODP-TAMU would examine alternate control schemes and sensors to provide redundancy, even though the present scheme was viable.

A primary compensator data acquisition system had been installed aboard *JOIDES Resolution.* Data would be collected on primary compensator performance: system air pressure (HC hoses/air bank), rod position sensor (stroke), accelerometers (upper/lower HC), load pin sensors and ship pitch/roll sensors. These data would be used to improve the DCS model and would help define input excitation for dynamic simulation efforts.

A retractable bit system for DCS was co-developed in the late 1970's by the US Bureau of Mines, Longyear Co. and Doerfer (Engineering Consulting Co.). It allowed changing DCS bits without tripping pipe. Shallow depths of industry DCS holes and introduction of new, long-life impregnated bits offset the potential industry benefit from the retractable bit system. It would, however, save much time in ODP DCS drilling (1-2 days/bit, depending on penetration; Appendix 5). Originally designed for "N" size core (i.e., 3.00" OD by 1.75" ID), it would have to be scaled up to "H" size for ODP DCS. The retractable bit system consisted of many parts, but only three main assemblies: 1) coring bit, 2) insertion (deployment) tool and 3) retraction (retrieval) tool. The original design only included surface set bits. Impregnated bit design must be added for use with ODP's DCS. Initial bit testing indicated no loss in drilling performance with special retractable bits.

Storms outlined three DCS development plans. 1) "Near-Term" Development Plan (Appendix 5) would require a projected funding level of $1.37M distributed over FY92, FY93 and FY94 ($640,000 for FY93). It would focus on correcting the DCS Phase IIB heave compensation deficiencies and addition of retractable bit capability. The goal would be to redeploy DCS in one of the Leg 142 holes on EPR. 2) "Long-Term" Development Plan (Appendix 5) would require a projected funding level of $1.355M distributed over FY95 and FY96. It would focus on continued Phase IIC testing and involve resumption of DI-BHA improvements, bit testing and refinements to seafloor hardware. This work was not required before the next at-sea test. The goal would be to deploy DCS Phase IIC successfully in another environment. 3) DCS "Phase III" Development Plan (Appendix 5) remained uncertain. The need for DCS Phase III was in question pending retractable bit evaluation. Phase IIB/C efficiency issues might cease to exist. Phase IIB/C safety issues might also cease to exist because of the thoroughness of earlier testing and projected usage of 1-2 times/year. Phase III might, therefore, not be needed.

With respect to the "Near-Term" Development Plan, Storms explained that $205,000 had already been spent, ~$640,000 would be required in FY93 and ~$500,000 in FY94 to get ready for a sea trial. There was strong industry interest in slimhole drilling. Amoco had expressed interest in using ODP's DCS for drilling offshore Tunisia, because ODP's DCS was more rugged than mining systems and provided different sampling options. Shell was developing an offshore slimhole system (6" compared to ODP's 3.9" system). Storms noted that DCS represented a considerable existing financial asset: DCS platform/drill rig, ~$1.5M; seafloor/drilling hardware, ~720,000; DI-BHA/DCB/DCS bits, ~$420,000 (see Appendix 5 for further details). He concluded that a reasonable budget for continued DCS development could be maintained at a level consistent with the present financial climate.

Discussion

Austin noted that the total expenditure on DCS to date, including ship time, was probably ~$15M. Further commitment would also involve ship time. BCOM had projected $272,000 for DCS during FY93. ODP-TAMU's plan would require an additional $370,000 for FY93. That money would have to be taken from something else. Becker asked how much of an increase that represented over the existing DCS funding level. Francis replied that it represented no increase. The original Program Plan had allocated $670,000 to DCS for FY93. That was subsequently cut to $272,000. Storms added that the budget had been ~$2M, but more than half of that had been for HRB, etc. Less would be needed now.

Loutit asked what bent the secondary heave compensator cylinder. Storms replied that it was probably bent in shipment from Mississippi to Houston following Leg 132. Loutit asked whether WOB could be kept constant if both cylinders were operating correctly. Storms answered that the consultants thought so. The approach had been judged viable and the bent cylinder was the primary problem on Leg 142. He added the caveat that better control systems were needed. Loutit asked how much Amoco was prepared to pay for use of ODP's DCS and whether it would cover any development costs. Storms replied that Amoco would pay for mobilization, refurbishing and personnel. ODP-TAMU was not allowed to make money on the arrangement. Francis added that Amoco would use DCS on a barge sitting on the seabed in only 5 m water depth. The secondary heave compensator would not, therefore, be tested.

In response to a question from Becker, Austin said that ~$4.5M had been spent on DCS development over 5 years. It had always been a SOE. Pending this discussion, $400,000 had been removed from the FY93 DCS budget. The only budget item that might be a source of additional funds was the ice-support vessel, for which $1.1M had been allocated. BCOM had felt that an ice-support vessel could be obtained for less. In reply to questions from Ambos, Storms explained that it had been difficult to tell that the cylinder was bent because the deflection had been only 6" in 30'. Damage during transportation was the most likely

explanation. ODP-TAMU now had special crates for transporting the cylinders. Ambos asked whether motion on the drill-ship could have exacerbated the problem. Storms, however, felt that all damage had been caused during transportation.

Lewis noted that DCS could be used in all environments and that the retractable bit would improve performance. Storms cautioned that, even if retractable bits were developed, DCS Phase II would always be slower than other systems (e.g., because of 10' pipe sections). Phase III would be more efficient than Phase II, even without retractable bits. Responding to a question from Loutit, Storms said that no amount of money could expedite the next deployment of DCS, because time was needed for simulation studies. Austin stressed that, in three at-sea deployments of DCS, very little experience had been gained in cutting core. Lancelot pointed out that DCS would not replace conventional drilling systems because of the restricted suite of logs available for slim holes. Larsen asked on what the consultants' had based their recommendations for improvements. Storms answered that they were not much based on input from Leg 142, but mostly on input from Leg 132 and examination of DCS design and simulation studies. Berger asked who the constituents for DCS were. Austin responded that DCS had always been touted as applicable to several environments. Three of the four thematic panels (LITHP, OHP and TECP) had strongly endorsed post-Leg 142 DCS development.

Arculus asked what options existed for slowing down DCS development more than was proposed. Francis replied that ODP-TAMU had devised the cheapest budget that would permit a test on EPR in FY94. All further development would be delayed until after that test, because DCS would presumably be finished if the test failed. Arculus suggested deferring the test to FY95. Austin expressed concern that the momentum of development would then be lost. Francis added that there would also be disappointment among ODP-TAMU staff. Storms agreed that there would be a loss of momentum.

Lancelot felt that thematic panel support was spurious. They had endorsed good recovery, which was all they wanted. They did not know that DCS would do the job. Only PCOM could decide whether to support DCS. Delaney suggested that, if DCS was so vital to ODP, a group of aggressive individuals be formed to raise the necessary funds from, e.g., industry or NSF. Francis, responding to Lancelot's comment, pointed out that DCS was known to work in the absence of heave. Loutit agreed that thematic panels did not care what system was used, but only about the result. Taylor recalled that , at the end of Leg 132, the secondary heave compensator had worked, but that much remained to be done before Leg 142. He asked whether ODP was back at the level of Leg 132. Storms replied that the primary problems on Leg 132 had involved seafloor hardware. They had been overcome (except for some DI-BHA details). Taylor asked whether, if the secondary heave compensator worked, the next DCS leg would be a science leg, or would DCS be perpetually in test mode without further hardware development. Storms felt that scientific results should be achieved, but that the next DCS deployment should be an engineering leg. He added that ODP-TAMU saw the next at-sea test as "do or die".

Taira felt that the situation had not changed since Leg 132. Leg 142 had been an accidental failure. He strongly supported further DCS development. Watkins stated that a lot of science depended on DCS. He liked Delaney's idea of actively seeking funds. The oil industry had different levels of budget. Research was the smallest, but this was a production problem and the amounts needed were trivial compared to industry's production budgets. He asked whether JOI, Inc. would object to such moves. Pyle replied that it could be done, but that it was not permissible to sell time on *JOIDES Resolution*. Francis said that ODP-TAMU had explored industry funding and that he was less optimistic. Oil companies generally expected something exclusive in return for funding. Loutit suggested targeting companies that were asking for ODP's DCS technology. Dick, while noting that offset drilling did not require DCS, stated that the lithosphere community needed DCS and that development should go forward. Goldberg

stressed the hidden cost of slimhole logging tool development. Delaney's idea was good and the same approach might be applied to development of slimhole tools. Larsen also liked Delaney's idea, but felt that it would be difficult to get funds from industry. Most of the problems were related to ODP's need to drill in deep water.

Austin asked whether or not outside funds should be sought, stressing that it could take months to get such funds. Storms noted that part of the "Near-Term" Development Plan cost was for a full-scale land test (independent of the proposed Amoco test). The land test was essential. Francis added that delays related to a search for outside funding would mean that the at-sea test would be postponed from FY94 to FY95. Storms felt that Amoco would be amenable to paying a day rate for DCS additional to cost of deployment, etc. He asked whether that was permissible. Neither Pyle nor Ambos was sure. Dick suggested charging depreciation. That would not be considered profit.

Mutter felt that DCS development must go ahead. Too much was riding on it. Leg 142 had failed before it went to sea. He suggested calling a charge to Amoco a "use fee", not a profit. Austin agreed, but cautioned that there was a budget limitation and that there were other items on which money could be spent, i.e., data handling. Mutter asked whether this would be an issue if Leg 142 had been a success. Pyle stressed the need to balance against other issues, e.g., computer upgrades, borehole fluid sampling, etc. Austin stated that the big item was data handling, requiring perhaps $800,000 during the first year. In addition, an additional platform for Leg 150 (NJ/MAT) would be ruled out (cost: $1.8M). Taylor expressed concern that, without an additional platform to tie offshore sites to onshore geology and drilling, the scientific objectives of Leg 150 would be compromised. Austin disagreed. Loutit pointed out that Leg 150 proponents were trying to get funding for an additional platform. That drilling could happen later.

Austin asked whether PCOM was philosophically committed to DCS. There was no dissent. Dauphin felt that that was an important step. Austin recalled that NSF had found money for a fuel supplement when it seemed that fuel costs would increase in 1990. There was, therefore, money in the system. PCOM might have to return to the issue of finances.

[The remainder of discussion of DCS took place on Wednesday, 12 August. It is included below for completeness.]

Mutter read a motion reaffirming PCOM's support for DCS. In response to a question from Berger, Austin said that the level of support for DCS would be the subject of a separate motion. It would be necessary to discuss data handling before deciding on funding levels. Lewis suggested adding to the motion that DCS would improve core recovery in other lithologies. Lancelot, however, cautioned against overselling. The motion was good as written. Leg 142 should be taken as a non-event, an accident. Austin agreed. Lewis, however, felt that the funding decision would be difficult if DCS was perceived only as a tool for recovering fractured basalt. Austin replied that the people present at this meeting understood the status and potential of DCS. Berger observed that it was only for fractured hard rock that DCS had received impassioned support. Austin recalled that OHP support had been strong. DCS was the only technique ODP had devised with the potential to produce the results that thematic panels wanted. Lewis felt that, if DCS would contribute to improved recovery of a wide range of lithologies, PCOM was underselling it. Pyle stated that it was not necessary to sell DCS to all of ODP. It was still worthwhile if it was only useful for one theme, provided that theme was exciting. Austin emphasized that DCS would help more than the mid-ocean ridge drilling community. Larsen endorsed the motion as written. PCOM could take the community into account when it discussed money. PCOM passed the following motion.

PCOM Motion

In light of the continuing requirement for a coring system that is capable of recovering rock types that cannot be effectively drilled by standard rotary bits, PCOM reconfirms its commitment to the development and deployment of a diamond coring system.
Motion Mutter, second Malpas Vote: for 17; against 0; abstain 0; absent 0

Summer Meeting JOIDES PCOM
Wednesday, 12 August 1992

963. Scientific Reports of Recent Drilling

LEG 143 - ATOLLS AND GUYOTS I

Winterer (Leg 143 Co-Chief) explained that results of legs 143 and 144 (Atolls and Guyots I and II) would be published in separate volumes. Results of the two legs differed somewhat, but they comprised, in effect, a "super leg".

Leg 143 had set out to look at seamounts resulting from a mid-Cretaceous episode of mid-plate volcanism. Since the volcanism occurred near the equator, reefs developed on edifices and provide "dipsticks" recording vertical trajectories. The objective of Leg 143 was to obtain records of mid-Cretaceous sea level in Barremian-Albian time (most reefs drowned during the Albian). Those sea level records would then be compared with records from elsewhere on the globe. Leg 143 had achieved good technical success, owing to the professionalism of the drillers and a very capable ODP-TAMU Operations Manager (E. Pollard).

Most drilling took place in the western part of the Mid-Pacific Mountains at Allison and "Huevo" (now Resolution) guyots. One site was also drilled in the basin next to Sylvania (Wodejebato) Guyot and an engineering test of *JOIDES Resolution's* shallow-water drilling capability was conducted in Enewetak lagoon.

At Allison Guyot (Site 856), bathymetric charts suggested that pelagics extended to 1700 m water depth, below which was limestone underlain by basalt. The site was drilled in what was interpreted to be the lagoon, which encountered basalt sills before time ran out. About 700 m of limestone was recovered, all of latest Albian age. Some planktonic forams were present to enable dating. Dating the rest, based on shallow-water fossils, had been more difficult. An expanded upper Paleocene to lower Oligocene section was recovered from the pelagic cap. The pelagic cap was triple-cored. Recovery rates in the pelagic cap had been good. Recovery rates had at first been poor in the underlying limestone, but had improved with depth, where the limestone was a little more marly. Limestones were of the lagoonal facies, porous and vuggy, with indicators of very shallow-water deposition and some indicators of subaerial exposure. Above the sills, decreasing evidence of volcanics and land plants was encountered, with more pure carbonate at the top of the limestone section. The upper 70 m of limestone was heavily phosphatized, with many cavities backfilled with pelagic, and some eolian, sediment characteristic of uplift and karsting. Results indicated uplift between latest Albian and middle Turonian, followed by drowning. Logs were good, and enabled the Shipboard Party to place lithological boundaries correctly. They suggested that cores recovered pieces of every lithology. The story uncovered was one of subsidence and disappearance of the landmass, followed by uplift and subsequent drowning.

At Resolution ("Huevo") Guyot, the limestone platform was very thick (1620 m). The base of the guyot was now at a water depth of 3000 m, while its crest was at 1300 m. This suggested

that the entire western Mid-Pacific Mountains were at sea level during the Barremian. Site 866 was drilled in the lagoon and sites 867 and 868 on the rim. Basement had been difficult to pick seismically. High-velocity layers masked those below. Basement turned out to be shallower than expected and was not a prominent reflector. The top of the limestone cap at Site 866 was karsted and of upper Albian age, as at Allison Guyot. Moving down section, an unconformity was encountered with Aptian limestones below. Winterer felt that the hiatus might be 10-12 m.y. The unconformity was a seismic horizon, but was not distinctive. No erosional relief was evident and it could have resulted from drowning. No lithological change was noted across the unconformity. Basalt at the bottom of the hole was reversely magnetized and underlay Barremian sediment. It was, therefore, probably formed during M1 magnetic anomaly time. Basalt was encountered with little warning. Only a few grains of volcanics occurred in overlying cores. Once again, limestone was mostly of very shallow water origin, with many indicators of supratidal conditions, e.g. calcrete, algal mats, stromatolites and keyhole vugs. Most limestones were subtidal or intertidal. Some oolites were encountered, perhaps indicating somewhat deeper paleo-water depths. Logs suggested pervasive cyclicity. Shallowing-upward cycles at ~1 m scale (representing a short interval) were observed and there were other apparent periodicities. The global sea-level story had not yet been resolved. It would come from future studies. At sites 867 and 868, on the rim of the guyot, the supposed "reef" was found to comprise mainly storm and beach deposits, underlain by lagoonal sediment. This had been a surprise. Many open cavities with small stalagmites and stalactites, clearly vadose features, had been encountered. At one point the drill dropped 9 m, indicating a large cavity or series of cavities. Some cavities were filled with sediment. The picture emerging seemed to that of a carbonate platform with sand islands on its edge and a sloping shoulder, with rudists, sponges, etc., below wave base.

Winterer went on to address the history of vertical excursions. Age of the crust below Resolution Guyot was thought to be 130 Ma (by extrapolation). Emplacement of plateau basalts occurred at ~121 Ma, accompanied by uplift to sea level, erosion and reef development. By middle Aptian, the edifice had sunk by ~500-1000 m (paleo-latitude ~20°S). Uplift to the surface occurred near the end of the Albian, followed by 1-3 m.y. of carbonate platform development. Emergence between the end of the Albian and middle of the Turonian (possibly with intervening subsidence) led to karsting and was followed by deposition of middle Turonian pelagic sediment. Vertical motions were complex. Allison Guyot came on the scene during the latest Albian period of uplift, suggesting that uplift was caused by a volcanic episode.

Considering only the western Mid-Pacific Mountains, the areal extent and thickness of mid-plate volcanics produced during the mid-Cretaceous could have affected global sea level by ~5 m. If a large swell surrounded that area, the sea-level effect could have been larger. This may have been a mechanism for sea-level variation in an ice-free world.

Discussion

Pyle asked what, if given the opportunity, would be the headline Winterer would choose for a press release. Winterer replied that he would choose the vertical motion story. In response to a question from Malpas, Winterer said that the basalt encountered at Allison Guyot had been identified as sills because of intrusive contacts at top and bottom with carbonates. Replying to a question from Mutter, Winterer said that the seamounts stuck out above a broad general plateau event. In reply to Austin, Winterer noted that the plateau composition seemed to be on the boundary between alkalic and tholeiitic. Von Rad asked whether the basalts had been dated. Winterer answered that their reverse magnetization was the only constraint to date. They would be radiometrically dated in future.

In response to a question from Arculus on the fluids story, Winterer said that the structure of the limestones was very open and that there had been no indication of anything but free circulation of seawater. Waters were not evolved. Jenkyns (Leg 143 Scientific Party) added basal carbonates were dolomitized, but they seemed to be seawater dolomites, not formed by water coming up from depth. He noted that oolites had been encountered resting on basalts—a rare occurrence.

Taylor expressed the opinion that the dipstick concept would be incapable of resolving fine-scale sea-level events, only large events. Winterer responded that he would not go quite that far. The dating problem was severe. He preferred to wait until log cyclicity had been examined for Milankovitch cycles. There were intervals of more open marine conditions, with greater abundance of pelagic microfossils in lagoonal sediments, but biostratigraphic resolution was poor. Taylor thought that tectonic activity would complicate the sea level story. Winterer countered that carbonates tracked sea level closely.

Sharaskin asked how the absence of volcanic pebbles in limestone above basement was explained. Winterer replied that it was probably due to low relief. He suggested that more such pebbles might have been encountered had a site been drilled nearer the center of the edifice. Delaney asked about the relationship between Allison and Resolution guyots and what had caused volcanic rejuvenation. Winterer expressed the view that all seamount chains contained upper Albian seamounts at their northern ends and that a major change in plate motion, occurring at ~98-100 Ma, sparked widespread tectonic events and initiated new chains of seamounts.

Austin recalled that Loutit had advocated reevaluating the sea-level strategy on the basis of new data. He noted that Leg 143 results constituted new data and asked how Winterer would change SL-WG strategy. Winterer replied that he would like to evaluate volcanic displacement with a view to estimating the resultant magnitude of sea-level change. Much of the stratigraphic record could be explained with only 10-20 m changes in sea level—there was no need for 100 m changes. Sea-level fluctuations with periods of 1-2 Ma were required. Western Pacific volcanic events had rapid onsets and slow decays, but a succession of such events might be capable of producing required periodicities and magnitudes of sea-level fluctuation.

964. Links with InterRIDGE

Austin returned to the issue of links between ODP and InterRIDGE. ODP nominated liaisons to report on InterRIDGE activities. There might be a need to strengthen ties further. He asked for discussion.

Becker noted that Malpas would be involved with InterRIDGE as Canadian liaison and that might help interaction. Malpas confirmed that. Austin expressed surprise that liaisons were reluctant to report to PCOM. He asked whether PCOM should continue the liaison system or take more substantive action, perhaps a position paper by a group drawn from both ODP and InterRIDGE. Malpas felt that the connection between LITHP and InterRIDGE should be stronger. Mutter suggested that liaisons might be reluctant to come to PCOM meetings because there was no follow-up. The question was what should ODP do now? ODP could generate a proposal. Austin responded that attempts to get panels to write proposals had met with limited success.

Lancelot pointed out that those involved in ODP and in InterRIDGE knew what each group was doing. When the groups felt they needed one another and wrote proposals for joint action, then there would be progress. The same applied to interaction with JGOFS, etc. There was a need to get into the problem definition phase and get together and write a proposal which

would benefit both programs. Dick noted that, though DCS was required for many InterRIDGE objectives, InterRIDGE could point out proposals of interest to them in deep crustal areas. In addition, both ODP and InterRIDGE were working to create analytical standards and information handling. A linkage would be beneficial. Austin highlighted the TAG hydrothermal proposal. Proponent and LITHP Chair, S. Humphris, was also involved in RIDGE. A proposal, therefore, existed. Was there a need to do more?

Francis asked whether there was anything that only the drillship could do for InterRIDGE. Delaney replied that there was. ODP had drilled into an active hydrothermal system and changed it. ODP did not, however, know what it had changed. Instrumentation, before and after drilling, and modeling of effects were needed. ODP could make holes in the seafloor. It was essential to instrument holes, and not just the seafloor and water column. Only then would a true seafloor system observatory have been established. Experiments between holes were also of interest.

Taylor pointed out that there was much overlap of personnel between ODP and InterRIDGE. Information was, therefore, flowing. He did not think that any structure needed to be established beyond that. Individuals could write proposals. Malpas agreed, stressing that InterRIDGE was also the ODP lithosphere community. The LRP included natural laboratories. That could be re-emphasized in the *JOIDES Journal.* Perhaps an article from InterRIDGE could be published in the *JOIDES Journal.* LITHP could be asked to provide feedback to PCOM on natural laboratories. Malpas did not see the need for another structural level, but would like to see LITHP discuss how it saw plans for instrumentation developing. Austin noted that Sedimented Ridges (SR; Leg 139) holes had been CORKed. SR-DPG had discussed a second leg. He asked how PCOM should act on that, adding that the second leg was keyed to DCS. Malpas replied that that was in hand, as something was being rewritten based on Leg 139 results. He added that InterRIDGE had been interested in global mapping at first, but that the ODP community had steered it toward active processes. Malpas reiterated that PCOM should ask LITHP to consider the matter. Austin replied that he could do that, and also ask OHP to explore JGOFS links and SGPP to explore IGBP links. Lewis felt that, since ODP was proposal-driven, proposals would eventually start things moving.

In response to a question from Delaney, Austin said that WGs were established in the ODP system when proposals existed, but without sufficient focus. WGs looked at long-term strategy for approach to a scientific theme. Delaney pointed out that, in spite of ODP having changed hydrothermal circulation in Middle Valley (Leg 139), the TAG proposal still did not propose instrumentation. In addition, microbial activity constituted a new scientific aspect. Drilling could sample rocks containing bacteria, which may be systems in which life originated. These concepts could be put together by a WG. Dick said that recovery of gabbro in Hole 735B had stimulated a group to discuss future ramifications of that discovery. An OD-WG was recommended, but not accepted at that time. Proposals had to come first. InterRIDGE could apply to USSAC to set up a workshop, but proposals must be written. Malpas cautioned against overemphasizing semantics (e.g., WG). ODP must decide what it wanted and fit the structure to that. InterRIDGE was setting up WGs. Malpas suggested a joint WG. InterRIDGE was not receiving proposals in a definitive format. ODP had more mature proposals. LITHP was the appropriate vehicle from the ODP side to pursue the matter. LITHP expertise could be supplemented with InterRIDGE representatives. Delaney agreed. Austin said that he would approach LITHP with the suggestion of a joint group and get LITHP's response.

Taylor, acknowledging that drilling perturbed hydrothermal systems, pointed out that PCOM would be faced, at its December 1992 meeting, with the decision of whether to schedule TAG for FY94. He asked whether InterRIDGE would suggest delaying drilling until the hydrothermal system was better understood, "putting the brakes on" TAG. Delaney replied that groups which knew how to instrument the seafloor existed. Drilling in FY94 would leave

enough time to instrument the site. He recommended against slowing down. Taylor stated that instrumentation was not ODP's job, but the responsibility of the rest of the community. Austin, however, felt that ODP must discuss it and be involved. Delaney agreed that ODP would not fund instrumentation. Taylor asked whether TAG should be delayed to allow for coordination. Delaney felt that that would be necessary only if coordination were delayed.

Francis noted that Juan de Fuca Ridge seemed to be a focus. He urged PCOM to bear in mind the logistical impact of such an effort. It was essential to decide where to focus. Hole 504B had survived in part because of its proximity to the Panama Canal. Malpas agreed that, in terms of upcoming legs, Juan de Fuca and TAG were locations for interface between ODP and InterRIDGE. PCOM could ask LITHP how it would modify drilling in those two areas based on InterRIDGE's perspective. It would almost be a DPG. Austin acknowledged that LITHP was well-configured for that and its Chair, Humphris, had access to InterRIDGE expertise. The best approach would be to ask LITHP how it felt links should be formalized and not tell LITHP what to do. Delaney added that he already had names of InterRIDGE representatives prepared to interact with ODP. Berger felt that PCOM should ask all panels about liaisons. Austin responded that he would write to all thematic panel chairs about links with other initiatives. LITHP, in particular, would consider more substantive interaction with InterRIDGE at its 14-16 October 1992 meeting.

Mutter noted ODP's requirements for site surveys. He felt that, for active systems, time series measurements might be required. He added that it was a philosophical point. Austin responded that the TAG drilling would not occur if time series measurements were made a requirement. Proponents would be furious at such a request. Delaney felt that more measurements should be made, but that that did not mean that TAG proponents had to make them. A new approach to science was required. Austin pointed out that NJ/MAT proponents had been active in writing proposals to get money to supplement ODP drilling. Scientists must do that work on their own. It would be a bad precedent to fund extra work. Malpas felt that ridge drilling was critical to the future of ODP and involved new science. PCOM should not worry about upsetting proponents. They should be asked how they would interface these ideas with, e.g., the TAG proposal. Pyle felt that knowing the impact of ODP drilling, based on pre- and post-drilling observations, was important. Austin agreed, but added that there was time to wait for LITHP's view. Humphris could get any additional expertise needed at the LITHP meeting.

965. Report of the DH-WG Steering Committee: the Future of Database Management in ODP

INTRODUCTION

Austin explained that, at its April 1992 meeting, PCOM had heard the report of DH-WG. It had talked of a perceived need to upgrade both shorebased and shipboard computing and database management within ODP over the next two years. Since then, the Data Handling Steering Committee had met twice and ODP-TAMU had prepared a proposal to advance this initiative in three years. The change from two to three years was in response to limitation of funds.

Gibson (DH-WG and Steering Committee Chair) reported that the work of shipboard scientists was being seriously hampered by inadequacies of the shipboard computing environment. *Ad hoc*, temporary fixes were being made on a leg-to-leg basis to overcome shortcomings (e.g., Leg 138). This was not satisfactory. Integration of logging results with core data was also essentially impossible within the confines of the present shipboard computing environment. The presently-installed S1032 (VAX VMS) database system was totally inadequate, "unfriendly" and being rejected by the shipboard community. The rational archiving of shipboard data for post-cruise and subsequent study had almost reached a state of collapse.

Gibson stated that he now had data to support this position. A graph showing the number of records in the database/leg showed that, at about the time of Leg 130, scientists ceased to tolerate inadequacies of the system and much less data was added after that (Appendix 6). Data were not now organized in a structure that allowed it to be retrieved easily. IHP's view was that this was intolerable. PCOM could not ignore this situation.

Gibson reviewed the background to this state of events. As IHP Chair, he accepted some responsibility. IHP had been aware of the problem, but had not had details a year ago when it first raised the issue. Now, a year later, talk continued. Gibson felt that a slow response time was built into the present panel structure and that that deserved some thought. Shipboard scientists must also share some blame, because they rejected a long-term view in favor of their leg objectives. Finally, ODP-TAMU must take some responsibility for leaving the database unchanged since the beginning of ODP—a long time in the field of computing. ODP-TAMU could have made a strong statement sooner.

DH-WG had reported to PCOM at its April 1992 meeting and made the following recommendations. 1) A large, UNIX-based, online database in a client-server configuration. The database server would be dedicated to the database function. 2) A network of client PC-386+ and Macintosh data entry modules feeding data into the online database. 3) Powerful IBM-PC, Mac and UNIX workstations for data retrieval and interpretation. 4) A parallel shorebased system, accessible over Internet, to house the ODP multi-leg database and linked to the drill-ship by improved satellite communications.

Subsequently, the Data Handling Steering Committee had met twice with ODP-TAMU (minutes in Agenda Book, white pages 311-316). The Steering Committee had been given no mandate to do other than work with the Science Operator (ODP-TAMU). He introduced Baldauf to present ODP-TAMU's proposal.

ODIN PROPOSAL

Baldauf summarized the development of computing in DSDP and ODP since 1968 (Appendix 6). During the first 10 years, the system had been paper-based. The S1032 database, then state-of-the-art, was introduced at the start of ODP. Advent of continuous core measurements created a load on the current computer configuration. Leg 138 showed that S1032 was inadequate for short- and, particularly, long-term needs.

Two meetings with the Data Handling Steering Committee in June and July 1992 led to the ODIN (Ocean Drilling Information Network) proposal (see also Agenda Book, white pages 317-330):

a) new shipboard and shorebased relational database system (ORACLE v. 7);
b) central server platform under UNIX operating system;
c) initial database to include current IHP-sanctioned data types (+natural gamma);
d) system to support object-oriented graphical user interface tools (GUIs), such as Macintosh, Microsoft Windows, Sun's Open Look, etc.;
e) data retrieval to use commercially available products, such as Microsoft Excel spreadsheet software or custom-developed applications;
f) system to support UNIX, PC and Mac workstations;
g) system to support core-core and core-log integration, remote Internet access, DataNet and other future developments;
h) quality control to incorporate data verification which would not hinder data acquisition or the user;
i) system to be completed during a three-year time frame (three-year period based on financial considerations—two years would be preferable);

j) application development, shipboard installation and testing occurring in phases;
k) application development to include proper documentation, user manuals and, where appropriate, similar user environments;
l) application development to be completed through five international subcontracts.

Once this baseline had been developed and realized, a task force would be required (Appendix 6 and Agenda Book, white page 325) to consider user and interface requirements (application design and development), data analysis and design, database administration and quality control, system/network management (daily activities, future planning and upgrades) and documentation management. The task force would work with the existing ODP-TAMU structure and also with subcontractors for software development, Data Handling Steering Committee, panels and users groups. The users group was critical and would require scientists familiar with the problem (~12 people). They should augment current panel membership and would work closely with Staff Scientists. Under ODP-TAMU's Manager of Information Services, the following elements of the organizational structure of ODP-TAMU (Appendix 6 and Agenda Book, white page 325) would contribute to the task force: Document Manager, Database Administrator, System Manager, Senior Analyst, with 1-2 system analysts (70%); Supervisor Database and Supervisor Computer Services (30%). Within ODP-TAMU's structure, therefore, there was some supplementation of the task force.

IHP-sanctioned data types and proposed subcontracts were listed (Appendix 6 and Agenda Book, white page 326). Some application development would be in-house and this was the first priority. The rest was divided between 5 subcontracts. Proposed subcontracts would change, but subcontract 1 would be carried out first. Subcontract 2 (chemistry) was more complex. Project timelines were shown (Appendix 6 and Agenda Book, white page 327). Year one would involve hiring, defining needs of database, generating RFPs and onset of subcontracts 1 and 4. The remaining three subcontracts would start in year 2, as would field testing. The program would be completed in year 3.

The draft budget was shown (Appendix 6 and Agenda Book, white page 324). Projected budgets were: year 1, $827,500; year 2, $877,000; year 3, 609,500. The budget comprised approximately $1/3$ personnel, $1/3$ subcontracts and $1/3$ supplies and travel. In the equipment category, the main expense was for database servers. The main expense in the software category was ORACLE. Possibilities for cost reduction by modification of baseline were: 1) subcontractors subsidizing their work, 2) use of student labor, 3) reduced quality control/assurance, 4) reduced data verification and 5) reduced documentation. Such moves might, however, result in loss of data, data of lower integrity and possible increased future costs for maintenance and enhancements.

Discussion

Gibson reiterated that Data Handling Steering Committee's mandate had been to work with the Science Operator. There had been active two-way exchange, but Gibson stressed that ODIN was a proposal from the Science Operator with advice from the Steering Committee. A letter from the Steering Committee supported ODIN and a second letter contained some comments (Agenda Book, white pages 328-330). ODIN met DH-WG requirements, except that it would take three years instead of two. Gibson had asked the University of Hawaii School of Ocean and Earth Science and Technology (SOEST) whether it would like to be a subcontractor. SOEST had had ideas different from ODIN, however, which Gibson wished Taylor to present.

Austin preferred to discuss ODIN first. By way of introduction, he highlighted K. Moran's (SMP Chair) written comment on the balance of work between ODP-TAMU and subcontractors (Agenda Book, white pages 329-330). EXCOM had stated that ODP-TAMU must coordinate development, because *JOIDES Resolution* could not be laid up while the

computer system upgrade was carried out. He expressed some concern, however, that as much as 1/3 of the budget would be for hiring by ODP-TAMU. In addition, though EXCOM wanted the effort to be international, US institutions could compete. Austin assured PCOM that it would hear later from SOEST.

Gibson noted that, though other options were not in the mandate of the Steering Committee, it did consider alternate, lower cost options (Agenda Book, white page 316). Malpas stated that cost must be considered at some point. Assuming that the ODIN proposal would alleviate the problem, PCOM should hear an alternative proposal before discussion, because cost would be the "bottom line". Austin pointed out that SOEST was not the only interested institution. Taylor's presentation must, therefore, be considered as an example of an alternative solution, and not the only one.

Larsen agreed that cost was the most important consideration. Design of architecture could be carried out by ODP-TAMU, by SOEST, or by a direct user approach with overall ODP-TAMU coordination. The level within the system at which the architecture was designed was important in order to avoid too bureaucratic an approach. It should be designed by users. Fisk said that it was not clear to him whether this development would take place aboard *JOIDES Resolution* or at ODP-TAMU. If the latter, he was unsure about how it would then be transported to *JOIDES Resolution* and used by scientists. He proposed that development take place aboard *JOIDES Resolution,* with continuous input from the scientists who were collecting data. Baldauf replied that development would take place at subcontractor sites. Field testing would occur aboard *JOIDES Resolution.* Francis agreed that development could not take place aboard *JOIDES Resolution* because of the need to maintain leg operations. Berger noted that there was a minimum dataset for every leg, to which was added data resulting from participants bringing their own instruments. Dick reiterated Fisk's comment. Development onshore could be dangerous and might produce a system not acceptable to shipboard parties. Baldauf responded that that was why a users group would be involved, augmenting the current panel structure.

Dauphin noted that money had been put into computing over the years. Now a crisis had arisen. He asked whether anything been learned that would enable avoidance of another crisis in a few years. Taylor answered that any system must be expandable so that new instruments, with their own data collection needs, could be added. He felt that the ODIN and SOEST proposals would handle that.

Mutter stated that all institutions periodically had to upgrade computers. He felt, however, that the ODIN proposal contained unusual cost ratios. Only 10% of the budget went into new purchases, the rest being for personnel, management and subcontractors. Austin agreed that devoting 1/3 of the budget to in-house personnel seemed unusual. Lancelot expressed concern about the proposed time frame. Software developed fast. He feared that the new software would be obsolete within three years and suggested a major, immediate change in hardware, followed by an update of software. The three-year time frame was too long and would allow considerable evolution in computing. Austin agreed, citing Leg 138, where participants installed a computing environment on *JOIDES Resolution* and got immediate results. It might be possible to make substantial progress in only a few months. Lancelot agreed, adding that a modular system was needed. Gibson said that the new system would be modular and implemented in parallel with the old system. It would also be flexible. The old system locked ODP into particular software and hardware, which was why the Science Operator had been unable to respond. Baldauf stated that the three-year time frame was a response to financial limitations. Austin feared that the budget figures were suspect. They had changed from $6M to $2.3M. Austin stressed that the final decision would be based on numbers and that care was necessary. Berger agreed with Lancelot. It was not possible to solve all problems; new ones would arise. It was necessary to provide a minimum environment to take care of routine data and not try to solve all future problems. The hardware problem was easily solvable and would

provide a platform with which scientists could work. Austin agreed, but cautioned that there were also archiving and data dissemination functions to consider.

Von Rad asked how immediate communication of data from *JOIDES Resolution* to shore would be reconciled with the proprietary nature of shipboard data. He also asked how visual core descriptions (VCD) would be stuffed into the system and what the costs would be after year 3. Gibson replied that, at present, dissemination of data in <1 year was not an issue, as there was no data transmission to shore. Data was made public in the Initial Reports volumes. If the situation changed, IHP would ask advice from PCOM. There was no intent to distribute data immediately. Austin added that automation of VCD had already occurred. Gibson noted that that had been for the benefit of the ODP-TAMU publications department. Concerning costs beyond year 3, Baldauf said that at least one additional computer specialist would be required in order to maintain the system.

Arculus asked what would be chosen for improvement if limited funds were available. Gibson replied that data archiving was collapsing and not even "limping along". It was not a "quick fix". Redesign of database acquisitions was required. Austin took Moran's point (see letter, Agenda Book, white pages 329-330) that divorcing hardware from software and design from programming posed potential problems. According to ODIN, software would be handled by subcontractors, but hardware and design specifications would be handled by ODP-TAMU. Gibson responded that the hardware environment was standard and not a problem.

Lewis asked whether there had been any discussion of other databases besides ORACLE. He cautioned against getting locked in. Gibson replied that the issue had been discussed. The choice was not easy and did lock ODP in to some extent. That depended upon how applications were designed. Francis stated that ODP-TAMU existed to serve shipboard scientists, who had, however, been selfish and not interested in getting data into the database. In addition, Leg 138's success had not been entirely due to participants bringing computers aboard. They received a lot of support from ODP-TAMU.

SOEST PROPOSAL

Austin noted that EXCOM had stated that computer upgrades should be coordinated by ODP-TAMU, but could be subcontracted. Taylor would present one possible alternative option.

Taylor circulated the SOEST proposal as a handout. He explained that it had been written by C. Helsley, R. Wilkins and M. Simpson. SOEST had not initially been particularly interested in responding, but generated its proposal after receiving the PCOM Agenda Book containing the ODIN proposal. SOEST had taken Moran's comments (Agenda Book, white pages 329-330) and wanted to provide a less top-heavy approach, with reduced emphasis on administration and more on the scientific community. Scientific users should define database architecture. The handout contained examples of a spread sheet and seismic velocity analysis. They were routine at SOEST, user-friendly, UNIX-based, interactive and incorporated data quality control. They provided examples of what the scientific community wanted to see. The budget was ~$750,000 in each of two years, ~$1/3$ to be spent on hardware. M. Simpson could go to sea on an ODP leg as soon as possible to interact with a group of scientists.

SOEST carried out these functions routinely with its research vessel and had a base of expertise. There would be no need for new hiring. The SOEST proposal would skip the first year of the ODIN proposal. Architecture could be defined quickly and trials aboard *JOIDES Resolution* could be carried out within 6 months.

Discussion

Austin expressed interest in hearing PCOM's reaction on how the ODIN proposal might be modified to permit rapid action. In response to a question from Larsen, Baldauf said that panels and shipboard participants would provide advice on ODIN free of charge; only travel costs would be involved. Larsen asked whether such costs were included in the SOEST proposal's budget. Taylor replied that no cost had been included for external liaisons, because SOEST had a large internal pool of participants in ODP. Austin noted that the SOEST proposal budget was still $1/3$ equipment and $1/3$ personnel. Mutter countered that only $\sim 1/10$ of the ODIN budget was devoted to equipment purchase. Taylor added that SOEST's personnel costs were equivalent to ODIN's subcontracts. Francis stated that much of the personnel cost in the ODIN proposal was in subcontracts. SOEST was saying that it would do everything, but EXCOM had specified subcontracts. Austin responded that the ODIN subcontract budget was, however, only $1/3$ of the total.

Gibson then presented proposals for action. 1) PCOM must recognize that computing was critical to the future success of ODP and must pass a motion requesting that funds ($800,000) be allocated to improve the shipboard computing environment during FY93. Austin countered that it would be rash for PCOM to commit to such an amount when ODP's funds were limited. Gibson urged that PCOM make the decision to spend money. Austin cautioned that, by making a year 1 decision, PCOM would also be making decisions to spend in years 2 and 3. Gibson did not feel that the luxury of deferring a decision existed. Malpas proposed omitting a funding figure and simply making a philosophical commitment. Austin replied that PCOM had already done that and now had to address funding. He added, however, that the issues were not as clear as Gibson had implied. 2) PCOM must expedite the work necessary to rationalize and modernize onboard computing facilities. Two viable and realistic bids for implementing DH-WG recommendations had been presented; these should be taken as forming the basis for future action. 3) PCOM must not reject out of hand the SOEST proposal, which suggests that the work might be done in a shorter time and for significantly less money. Rejecting such a proposal might lead to unnecessary expenditure, additional delay, or both. Gibson added that he had not evaluated the SOEST proposal technically, but that it might work.

Austin stated that other interested parties would have to be allowed to bid, but that that introduced further delays. Dick noted that the SOEST proposal placed a programmer on *JOIDES Resolution*, interacting with scientists. That was the best approach to developing applications. Lancelot and Fisk had previously made that point. Rolling development of applications was best. Ambos asked how firm the budget figures were in both ODIN and SOEST proposals, considering that both had been prepared rapidly. Francis felt that it was easy to be presented with the ODIN proposal and then come back and claim to be able to do the work at lower cost, as SOEST had done. He felt that the SOEST proposal was not doing the same work as was covered by ODIN. ODP-TAMU would be happy to have SOEST as a subcontractor. ODIN was a joint proposal of ODP-TAMU and the Data Handling Steering Committee. Taylor said that the SOEST proposal budget figures would not change much. He agreed that what was proposed was not the same as the ODP-TAMU (ODIN) budget because the SOEST proposal assumed that monitoring, because of EXCOM's decree and the Science Operator's responsibility, would still be performed by ODP-TAMU. Arculus asked whether Data Handling Steering Committee had made a clear statement of what would be required. Gibson replied that DH-WG had spelled out what was required. Both proposals met those requirements. ODP-TAMU proposed to take a more controlling approach to software development, while SOEST would be more interactive with users. In response to a question from Watkins, Gibson said that Data Handling Steering Committee had worked with ODP-TAMU on ODIN and would interact with SOEST, but that that would delay a decision. Austin stressed that PCOM needed to make a commitment now.

Taylor characterized the SOEST proposal as holistic, requiring no subcontracts. Austin suggested that ODIN could be viewed as setting a performance standard. Bids could then be solicited from the community. That would, however, delay the decision. Taylor said that the SOEST proposal had been an attempt to respond to ODP's need. Mutter endorsed the holistic philosophy of the SOEST proposal. Austin stated that it would still have to come under the Science Operator's supervision. In addition, input from other interested bidders would have to be allowed. PCOM's philosophical support was on record. Now it was time for allocation of funds. He asked whether that could be done without knowing all of the potential players. Pyle asked whether the necessity of ODP-TAMU doing some work was not a hidden cost in the SOEST proposal. Taylor replied that the SOEST proposal was a response to a product request, without specifying every detail. There was a separate cost, which represented the Science Operator doing its job.

Lewis pointed out that SOEST personnel devoted to this effort would be lost to SOEST. He asked how the SOEST proposal addressed the need for a relational database. Taylor agreed that the work would take some SOEST personnel out of circulation, adding that that was one reason why SOEST was not keen to follow up its proposal. SOEST had, however, seen the need to provide an alternative. SOEST had no experience with ORACLE 7, but a relational database would be required. If the broader community was happy with ORACLE 7, SOEST could work with that. SOEST did not have a specific relational database in mind. Lewis stated that the choice of database was very important, particularly because of the range of cost versus flexibility required. Taylor responded that he understood that ORACLE was a very flexible database. Fisk noted that the SOEST proposal involved a cost to JOI, Inc. as a result of involving interaction of scientists on *JOIDES Resolution*. That was not addressed clearly by SOEST and was assumed to be more on a volunteer basis. Francis said that that input would be provided at ODP-TAMU by Staff Scientists. Austin expressed concern that Staff Scientists were already overcommitted. Francis replied that ODP-TAMU would be recruiting another Staff Scientist for that reason. He continued that, however the system was put together, ODP-TAMU would have to manage, operate and maintain the system and that proper documentation would, therefore, be essential. He was concerned that that would not be available. Taylor responded that SOEST envisaged training ODP-TAMU personnel.

Austin advised PCOM not to get involved with too many details of the SOEST proposal. The general issue was the level of subcontracting that would occur. A performance specification was necessary that would go out for competitive bidding. He stressed that Moran (Agenda Book, white pages 329-330) had proposed defining performance specifications that would form the basis of bids for development and implementation, including the design component. Gibson recalled that he had advised PCOM, at its April 1992 meeting, to contract data handling work to an outside group which would liaise with ODP-TAMU. There was no need for ODP-TAMU to spell out the details of every step. Austin reminded PCOM that both ODIN and SOEST proposal had been produced in <1 week. It would be irresponsible to commit to either without more information. Francis noted that this initiative only involved a fraction of the scientific community. An ODP-TAMU survey had revealed that only 11% of participants in legs 120-140 had considered the shipboard computing facilities unsatisfactory. Panic measures would, therefore, be unwise.

Austin doubted that PCOM could do more than ask ODP-TAMU to reword the ODIN proposal to emphasize performance and request bids from international partners. That might mean deferring a decision until the December 1992 PCOM meeting. Watkins agreed. ODP would be stuck with the final choice for the next 5-10 years, so care must be taken in reaching a decision. Lancelot also supported Austin's approach, but added that PCOM had a figure of ~$500,000 - $800,000 in mind and it was important to take some action immediately. Lancelot, therefore, favored a motion specifying an amount. Austin felt that that did not help PCOM decide on where to find the amount specified. The base budget would be squeezed. Austin asked what

ODP would be able to live without in order to provide such funds. Lancelot agreed that, if no extra funds could be squeezed from the budget, no action was possible. Malpas recalled that, at the April 1992 PCOM meeting, Gibson had proposed three ways to proceed (Agenda Book, white page 44 and subsequent discussion on white pages 44-46). Malpas felt that perhaps PCOM had been mistaken in rejecting bringing in other interests at that time. Austin stressed that it was essential to work through ODP-TAMU and not open it up to a free-for-all. He was glad, however, that Gibson had raised the issue and expressed the view that SOEST had "done us a favor". Malpas noted that it had been suggested at the April 1992 PCOM meeting that ODP-TAMU contact others who might be interested, but that PCOM had been steered away from that approach. Now PCOM was faced with the same issue, but time had gone by. Austin stated that more information was available now, but that ODP was faced with an intractable budget.

Austin presented a summary of possibilities for squeezing money from ODP's budget, based on BCOM's FY93 budget SOEs (January 1992 BCOM meeting).

DCS had been allocated ~$272,000.

Provision of an ice support vessel had been allocated $1.1M, though BCOM foresaw a possible savings of ~$300,000-$500,000.

The "bottom line" for FY93 was, therefore, that there might be ~$572,000-772,000 of discretionary funds in FY93. Those funds must be distributed among the following items.

DCS requirement: $640,000, or ~$400,000 without a land test (without a land test in FY93, however, there would be no at-sea test in FY94).

Data handling requirement: ODIN $827,500; SOEST $718,000.

Pore-fluid sampling requirement: unknown.

Deep drilling requirement: unknown.

Austin noted that no ice support vessel would be required in FY94, so that the $1.1M allocated for an ice support vessel in FY93 would be available for other items in FY94. There would also be a $1.2M (7%) total increase in contributions from international partners in FY94 or FY95. There would, therefore, be some money in the system later. FY93 was the hurdle. Cost of an at-sea deployment of DCS (~$1M) should also be taken into account.

In response to a question from Dick, Taylor explained that the SOEST computer specialist would only sail on one ODP leg. Taira stated that he was against a motion specifying an amount for data handling. The total of $500,000 was too much to invest without careful consideration. He asked whether an incremental approach was possible, i.e., purchase a couple of work stations to satisfy urgent needs and then consider the long term. Gibson responded that that would make it easy for scientists to continue doing what they already did when they brought their own work stations on board and was not tackling the overall problem. Mutter, however, endorsed Taira's suggestion and asked whether there was a way to tackle the most critical needs. Baldauf replied that work stations were being procured. In addition, IHP and SMP would prioritize problems and address them in a stepwise fashion. Lewis asked the status of the ethernet hook-up. Baldauf was not sure of timing. Lewis felt that it could be done now. Baldauf agreed.

Austin asked if it would be more acceptable to write a motion that did not specify amounts. Mutter emphasized the need to address the decision between ODIN and SOEST proposals and how the money should be spent. Austin expressed sympathy with the holistic approach, but noted that ODP was up against budget limitations. He felt that another iteration was needed to assess the level of interest among potential subcontractors. ODP-TAMU could do that. One option would be to fund DCS at a level of $640,000, by assuming that savings would be realized on the ice support vessel. Austin favored doing one thing well. It would, however, constrain ODP-TAMU to obtain an ice support vessel at a cost of $800,000. Francis thought that money could be saved on the ice support vessel. Austin stated that BCOM had specified

that any savings would go to JOI, Inc., which would then decide on their use. Pyle responded that JOI, Inc. would ask for PCOM advice in that eventuality.

Austin suggested funding DCS, with the proviso that progress must be made on data handling and that ODP-TAMU should assess interest in bidding. Mutter reiterated that the ODIN proposal constrained subcontracts unduly. Potential subcontractors should have flexibility regarding what to bid. Austin stressed that there must be a performance specification. Gibson felt that DH-WG had provided that. Malpas proposed that DH-WG assess interest of potential subcontractors. He agreed that the ODIN proposal boxed in subcontractors and left ODP-TAMU in control of management. Pyle stated that only JOI, Inc. or ODP-TAMU could go to interested parties. Malpas responded that he just preferred that subcontract not be boxed in. Austin agreed that assessing subcontractor interest must be under the aegis of JOI, Inc. Francis stated that EXCOM's instructions (issued at its June 1992 meeting) constrained ODP-TAMU to write RFPs and contact subcontractors. Malpas countered that the mechanism of asking for RFPs outside the ODIN proposal, through JOI, Inc., was not counter to EXCOM's motion. Malpas emphasized that he was not suggesting that ODP-TAMU be taken out of the loop, but that RFPs not be constrained by the ODIN proposal.

Pyle asked who would evaluate proposals resulting from ODP-TAMU's issuance of RFPs. Austin said that that would have to be specified. Pyle stated that it would have to be known in advance. Lancelot commented that he would prefer RFPs to be issued by JOI, Inc., rather than ODP-TAMU, and that an evaluation committee be set up independent of ODP-TAMU. Pyle, however, pointed out that ODP-TAMU would have to oversee and operate the system and it should, therefore, issue RFPs. Austin expressed concern about possible conflict of interest. The ODIN proposal was on the table and ODP-TAMU had a stake in the outcome of the process. The evaluation committee must be configured to ensure that no organization had an unfair advantage. Results would be delayed as a result of this process, but Austin hoped that the Data Handling Steering Committee would understand that PCOM did want to see action. Gibson asked what sort of RFP ODP-TAMU would issue. Austin replied that the core of the SOW would be the DH-WG recommendations and not the ODIN proposal. Mutter noted that this course of action would not necessarily result in delay, e.g., SOEST claimed to be able to accomplish the task in two years. Austin reminded PCOM that FY93 was the "crunch year". ODP's financial situation might improve after that.

Taylor asked why DCS should win this battle. Austin replied that DCS was cheaper and the work could be accomplished, financially. There was a need to do one thing well. It was uncertain whether data handling work could be carried out sufficiently well within the confines of the existing budget. Lancelot wished to discuss the opposite view. He asked what science was envisioned to be dependent on DCS, and in what time frame, in comparison to data handling problems. Lancelot asked how much delaying DCS by one year would harm the system, relative to delaying data handling work by one year. Mutter pointed out that basing conclusions on the drilling schedule was not useful. DCS legs had not been scheduled earlier because DCS had not been ready. Austin said that both NARM volcanic drilling of seaward-dipping wedges and TAG wwould be hurt without DCS. Larsen disagreed, asserting that NARM volcanic did not need DCS. Austin agreed that PCOM could allocate some money to both DCS and data handling, but that neither would then be adequately funded. Watkins warned about the loss of momentum that would result from postponing work on DCS.

Mutter noted that some extra money was gained if DCS was not land tested. Storms responded that both TEDCOM and ODP-TAMU felt that DCS should not go to sea without a sophisticated land test. It was critical to ensure that the system was operating. The only option would be to defer DCS by a year. The land test was estimated to cost $150,000-$200,000. He asked whether Leg 151 (NAAG-I) objectives could be modified to enable the ice support vessel to be deferred. There would be no high-latitude leg in FY94, so deferral of the ice support vessel

would be for two years. Francis, however, stated that the ice support vessel was needed for safety and operational reasons. Austin added that NAAG-DPG had stressed beginning with the most northerly sites for Leg 151. Larsen asked whether the need for a land test of DCS was based on the idea that the next at-sea DCS test would be "do or die". Would a land test be required if PCOM stated that the next at-sea DCS test was not "do or die"? Storms replied that the need for a land test was based on results of Leg 142 and TEDCOM recommendations. Austin felt that PCOM must go with the recommendations of ODP-TAMU's engineers. They were trying to ensure that the next at-sea DCS test would be successful. Fisk asked whether the land test would only be of the secondary heave compensator or of the whole DCS. He expressed the belief that the secondary heave compensator worked and that Leg 142's problems had been the result of an accident. Francis stressed that that could not be taken for granted. ODP-TAMU had not gained enough experience with DCS. Pyle recalled that a land test of DCS was a recommendation that had been made for several years. It had always been dropped because of lack of money. It must be done this time. Lewis added that it was also needed to test new DCS software. Storms agreed and noted that redundant sensor back-up control systems also needed the test. ODP-TAMU had always carried out some form of land test, but not the most expensive type, i.e., that of the secondary heave compensator.

Austin proposed deferring the land test until FY94, which removed the possibility of a FY94 at-sea DCS test, and allocating all other resources to the most critical elements of the data handling work. At the same time, ODP-TAMU should proceed to assess interest among prospective data handling subcontractors. In response to a question from Dick, Austin said that deferring a land test until FY94 meant that an at-sea test would be postponed until FY95. That would free $100,000-$200,000. Fisk asked whether there was any money in ODP-TAMU's current computing/data handling budget which could be freed up for FY93. Austin replied that that was not possible. ODP-TAMU had already reorganized its computing operation and nobody there was underemployed. Larsen asked whether compromising on DCS testing and deployment might erode the basis for obtaining external funding for DCS. Austin stressed that somebody would have to take responsibility for chasing such money. Francis doubted that such money would be available. Lewis, noting that there remained disagreement about computing, favored funding DCS fully, enabling land testing in FY93 and an at-sea test in FY94. Referring to Larsen's comment, Lancelot cautioned against dismissing the possibility of external funding for DCS too quickly. The money might be there. Austin agreed that such funds should still be pursued.

Jenkyns suggested a straw vote on the funding compromise (i.e., deferring a DCS land test to enable some data handling funding in FY93) versus full DCS funding (land test in FY93). Taylor agreed and added that, in choosing, PCOM should be aware that there was a large community worried about data handling. It was important to give them something. Austin countered that they would still complain if PCOM only threw them peanuts. Storms stated that oil industry research budgets were very tight, adding that all contact with Amoco regarding their use of DCS had so far only been verbal.

The resulting straw vote was indecisive. Lewis emphasized that PCOM must know what it was voting for in the way of computing first. Austin agreed that a motion would be required. He suggested that it might involve ODP-TAMU assessing outside interest (by RFP), with proposals to be evaluated by a committee. Francis noted that resources would not be available until January 1993, when a decision on an ice support vessel was made. That would give time to talk to SOEST and non-US interested parties in the next few months. Austin said that PCOM should have responses to any data handling RFP at its December 1992 meeting. PCOM still, however, needed to allocate money. The amounts would be similar to those previously noted. Francis expressed concern about paring down the ice support vessel too much. It was a safety item. ODP-TAMU had been instructed to acquire it at minimum cost, which it would do in any case. Cost would be a major factor.

Mutter stated that the compromise allowed progress on two fronts. Austin said that it would be acceptable to specify simply that any overflow funds would go into data handling without specifying an amount. Berger observed that, in that case, it would be necessary to place a limit on DCS spending to ensure that there was an overflow. Austin responded that that limit would be the requested DCS budget figure ($640,000) minus the cost of a land test, which was not firmly established. Taylor pointed out that PCOM could give the prime amount to data handling and the overflow to DCS instead. In support of that plan, he explained that if no savings were realized on the ice support vessel, only $272,000 (current DCS allocation) would be available. That would permit some progress on data handling, but would be insufficient for useful progress on DCS. Austin countered that data handling was a "black box". Its actual budget requirements were poorly constrained. Even under the most optimistic ice support vessel savings scenario, there would be no overflow for DCS if data handling received primary funding. Larsen acknowledged that estimation of the cost of an ice support vessel was difficult, but felt that $750,000 was reasonable. Austin reiterated that an ice support vessel was a Sedco requirement when close to ice. PCOM passed the following motion.

PCOM Motion

PCOM requests that the Science Operator (ODP-TAMU) issue a RFP to the ODP community to provide a shipboard and shorebased computing facility which meets the performance specifications set by DH-WG at its Toronto meeting. The responses to the RFP are to be evaluated by an impartial expert committee including PCOM Chair, DH-WG Chair, representative of the Science Operator, representative of JOI, Inc., and two other PCOM-appointed members. This evaluation committee will report to PCOM at its December 1992 meeting.

Motion Malpas, second Mutter Vote: for 17; against 0; abstain 0; absent 0

Mutter asked whether PCOM could specify that final answers on the future of DCS be available by the end of FY95. Austin felt that that would be unfair. PCOM made the decisions controlling events. Lewis, however, supported Mutter's point. There would be a move to continue DCS if the FY94 field test was successful. Otherwise, there would be moves to stop. Austin did not mind delaying work on DCS, but did not wish it to stop. He suggested a motion to allocate to DCS an amount equal to the requested DCS budget figure ($640,000) minus the cost of a land test. The resulting amount would be of the order of $400,000. If $300,000-$500,000 was saved on the ice support vessel and, adding the currently allocated DCS budget figure ($272,000), the overflow should be ~$172,000-$372,000 for data handling. Meanwhile ODP-TAMU would assess community response by RFP. Storms pointed out that setting the DCS budget at $400,000 would involve cutting more than just the land test.

Gibson asked whether the overflow would go to fund one of the potential bids. Austin replied that he could not answer that. Lancelot asked whether ODP-TAMU would give some hint to bidders as to what amount would be available. Austin responded that bidders would have to bid on the SOW. Gibson felt that bidders should be given some indication of funds available.

Malpas raised the issue of appointing members to the data handling RFP Evaluation Committee. Austin agreed. PCOM agreed that Gibson, Lewis, Lancelot, Pyle, Francis (or other ODP-TAMU representative), plus one additional PCOM-nominated member, would comprise the Evaluation Committee. L. Mayer (New Brunswick) and A. Mix (OSU) were nominated (Austin to obtain agreement from nominee).

Austin read a draft motion on DCS and data handling funding amounts. Larsen proposed adding that DCS would be land-tested in FY94. Austin agreed. Lewis felt that it would be best

not to rule out earlier testing in case money could be obtained. PCOM passed the following motion.

PCOM Motion

PCOM recognizes that both the DCS and upgrade of the ODP computing system are of great importance to ODP science. PCOM further notes that some savings for the Leg 151 ice-support vessel may be possible. If such savings are realized, DCS should be funded at a level of $400,000 and any additional overflow (possibly several hundred thousand dollars) will go toward computing upgrades in FY93. PCOM realizes that this may delay land testing of the DCS to FY94 and sea testing to FY95.
Motion Lewis, second Taira Vote: for 15; against 1; abstain 0; absent 1

966. Adjustments to the Near-Term Program

LEG 146: CASCADIA / SANTA BARBARA BASIN DRILLING

Austin felt that PCOM would only need to endorse an earlier action. He recalled that, at its April 1992 meeting, PCOM had added a day to Leg 146 (CA) for drilling of a single site in the Santa Barbara Basin (SBB) at the end of that leg. A day was to be removed from Leg 148 to compensate (Agenda Book, blue page 21, white page 55). The site, in east central SBB, was a site of opportunity. The varved sedimentary record would be APC-, or double-APC-, cored to 200 mbsf for climatic and geochemical studies. OHP Chair had contacted SBB proponents to ensure that a site-survey package be available by 1 August 1992. Proponents obtained USSAC funding for a high-resolution seismic survey (SCS and 3.5 kHz).

SB-1 was the chosen site. It was close to, but just outside, shipping lanes. The view was that no faulting or structure was present. The 3.5 kHz records indicated disseminated gas, which had not caused undue PPSP concern. Gas in sediment might, however, affect transportation of cores, which would be shipped from Panama after Leg 147. PPSP felt that the site was "reasonably safe", but reserved the right to look at the data again in detail during its October 1992 meeting (which would take place during Leg 146, but before SBB was drilled). Leg 146 Co-Chiefs understood that the extra day would be theirs for additional Cascadia work if SBB drilling was canceled. In response to a question from Dick, Austin explained that the extra day would not revert to Leg 148 in the event of cancellation of SBB drilling.

Francis reported that a letter from G. Claypool (PPSP) had indicated that there was no safety problem at SBB, but that gas hydrate might be present and more than one day would be needed to do justice to the site. Francis added that the site was close to the mainland and the drill-ship would be visible from shore. In view of the moratorium on oil drilling in the area and, this might create a public relations issue. ODP-TAMU was exploring options. Baldauf added that Leg 146 cores would be sampled for gas and shipped from San Diego. SBB cores, however, would remain aboard *JOIDES Resolution* and be passed through MST on Leg 147. SBB cores would then be shipped from Panama. Splitting, etc. would occur in early March 1993 in College Station. ODP-TAMU would request letters of interest from the international community for participation in sampling by 1 October 1992. Sample requests should be submitted by 1 December 1992. In response to a question from Austin, Baldauf said that results of SBB drilling would be broken down into parts. Coring operations during Leg 146 would go into the Leg 146 Initial Report. Discussion of continuous core measurements, combined with photography and descriptions from the March 1992 meeting, would probably be included in a separate section in the Leg 147 Initial Report, because of the timing of publications. SBB scientific results (about 25 manuscripts were anticipated) could go into

either the Leg 146 or Leg 147 Scientific Results volumes. Austin expressed a preference for inclusion of all SBB results in the Leg 146 volumes. There was little thematic tie between SBB and HD (Leg 147). Baldauf responded that that would be no problem in the case of the Scientific Results volume, but that inclusion of SBB results might delay the Leg 146 Initial Reports volume.

Baldauf noted that sample request forms would be evaluated by J. Kennett (SBB proponent) and himself. Lancelot commented that Kennett would be, in effect, a shorebased Co-Chief. Baldauf acknowledged that that might be the appearance, but stressed that nobody would be excluded.

Berger asked what arrangements had been made to minimize core disturbance due to anticipated gas content of SBB sediment. Baldauf assumed that the situation would be similar to that encountered on Leg 108, when gas caused expansion of cores to 10.5 m in a 10 m core barrel. It had already been flagged as an issue. Taylor asked whether ODP-TAMU was comfortable with proximity of the site to shipping lanes. Francis replied that there were 3 possible site from which to choose in the event of concern. Austin added that Kennett had affirmed that any of the sites would be acceptable and the final choice would be up to the Leg 146 Co-Chiefs. He felt that no further PCOM motion or consensus on SBB drilling was required.

LEG 148: DEEPENING HOLE 504B

Austin reported that a number of experiments had been proposed as augmentation to deepening Hole 504B: VSP, CORK/thermal monitoring and a test of high-temperature logging instrumentation (Agenda Book, blue pages 22-23 and Leg 148 section). Some of the proposals required immediate action, while others could be deferred.

Becker (a proponent) stated that the CORK/thermal monitoring experiment could not be done and must be withdrawn. DMP and LITHP had not endorsed it and ODP-TAMU could not, in any case, spare the necessary 1 man-week of engineering time for equipment preparation.

Austin explained that both VSP and high-temperature logging instrumentation proposals were from WHOI. There was sufficient time to allow panels to comment on both at their fall meetings. The primary goal of Leg 148 was to deepen Hole 504B. The experiments would take place post-deepening. DMP had not come out strongly against the tests, but did not wish to compromise the objective of deepening Hole 504B or the integrity of the hole. Becker pointed out that, at the DMP meeting, the VSP experiment had only been a rumor and there had been no indication of the high-temperature instrumentation experiment. Austin stated that LITHP (S. Humphris) and TECP (E. Moores) chairs had stressed that deepening Hole 504B was the most important Leg 148 objective.

Dick, as WHOI representative to PCOM, asked if he could comment. Austin replied that he could comment, but that PCOM must be aware of the potential for conflict of interest. Austin said that he could ask the panels to comment in the fall. He had only asked Panel Chairs so far. He had also asked P. Stoffa (UTIG) whether VSP should be run on the entire hole or only on the section not covered on Leg 111. Stoffa had felt that time could be saved by not running the experiment on the entire hole, but ensuring an overlap of 100-150 m. Mutter agreed with that assessment. Dick, however, noted that the Leg 111 data were not available and that the VSP should be run on the entire hole. Austin stated that the data were available. Dick felt that PCOM should exert pressure to ensure their availability. Austin agreed.

Austin stated that there was a philosphical commitment to run a downhole (not offset) VSP on Leg 148, but not necessarily on the entire hole. Becker said that the VSP proponents needed a more definitive response, because they would have to approach USSAC for funding. Austin

expressed the concern that USSAC would feel constrained to make money available if PCOM issued a stronger statement (which had happened in the case of the site survey for SBB). He was not sure that that was a good idea. He felt that USSAC should approach the Co-Chiefs. Pyle denied that a positive decision had been forced on USSAC. Austin thought that USSAC had felt forced. This was a Co-Chief decision. PCOM would say so in a motion if it did not want a VSP run. Becker noted that the pre-cruise meeting would take place within a month. He was concerned about deferring all to the Co-Chiefs in that they might not have adequate technical advice (e.g., about overlap of future and previous VSPs). Austin did not think that PCOM needed to give such advice. Dick suggested a motion. Larsen suggested emphasizing that a VSP need not be run on the entire hole if old VSP data were available. Austin did not feel that a motion was necessary. The minutes would reflect PCOM's views.

Baldauf raised the issue of J. Gieskes' NaBr experiment. Austin responded that that was not time-intrusive and required no PCOM action. Baldauf stated that it would be minimally time-intrusive. Austin recalled that the NaBr experiment had been previously endorsed by PCOM and that no further action was required.

Wireline Logging Engineering Report

Goldberg gave his report (deferred from the previous day) at this point because some development tools could be tested on Leg 148 (see also Appendix 7).

1) The high-temperature cable (BRGM, France) could be tested on Leg 148. The French high-temperature temperature tool had been land-tested 3-4 times, but had not been fully tested because of the difficulty of finding a site with a suitable temperature range. Hole 504B would be only marginally sufficient. 2) The high-temperature resistivity tool (CSM, UK) would undergo an autoclave test in September 1992. It would also be tested on Leg 148. 3) The directional shear sonic tool (ODP-LDGO) would be tested onshore in August/September 1992 and might be tested on Leg 148.

Austin felt that someone from ODP-LDGO should attend the Leg 148 pre-cruise meeting to inform Co-Chiefs. Goldberg agreed that input would be required, because the Co-Chiefs would be reluctant. In addition, the cable test would require that preparations begin by October 1992. Becker noted that the third-party tool guidelines specified a land test before at-sea deployment. These tools did not fulfill that requirement (nor did the WHOI [Von Herzen] tool). Their use on Leg 148 entailed the possibility of junking Hole 504B. Taylor agreed. Any tests would have to take place at the very end of the leg. Austin agreed that land tests were a fundamental requirement and that Hole 504B was very valuable to ODP. Goldberg stated that acceptable land test sites were difficult to find, but concurred with their necessity. Lancelot asked whether DMP had made land test specifications. It was difficult to meet the temperature specifications. Austin stated that DMP would have to consider this issue, but that testing could not occur in Hole 504B. Therefore, there would be no need to present information on testing to Leg 148 Co-Chiefs.

Dick expressed the opinion that there was a 50% possibility that Hole 504B would cease to be drillable half way through Leg 148. Leg 140 had had the benefit of much experience and improved technology, but Dick felt that conditions had been "touch and go" all the way down. He suggested, therefore, that PCOM remain open to conducting tests of logging tools during the leg. Austin responded that, at OD-WG in February 1992, E. Pollard (ODP-TAMU) had felt that Hole 504B could be deepened by perhaps 1000 m. Becker said that Dick was merely suggesting having the tools on board so that they could be tested if the opportunity arose. Austin stated that there was time to float this issue before the panels at their fall meetings. Dick reiterated that tools should be tested on Leg 148 without a prior land test, if the usefulness of

Hole 504B was determined to be at an end. There was general agreement with the plan to have DMP address this issue. Von Rad noted that KTB might be a good site for a land test.

LEG 149: NARM NON-VOLCANIC-I

Austin recalled that Leg 149 had been scheduled, at the December 1991 PCOM meeting, as a transect (IAP-2, 3 and 4), in accordance with NARM-DPG. The idea had been to tackle shallower targets first. At its April 1992 meeting, PCOM had reconsidered the order of Leg 149 objectives. PCOM had not changed its philosophical commitment to the transect, but had changed the primary target of Leg 149. Deep hole IAP-1, landward of the ocean/continent boundary, was substituted for the transect, with a view to sampling deep, syn-rift sediments. That approach would require a ~2.5 km-deep hole in ~5 km water depth. The Co-Chiefs had responded with a number of scenarios for change. They had felt that, based on ODP-TAMU drilling time estimates, IAP-1 would not reach basement during Leg 149. PCOM had felt that IAP-1 might reach basement, but would not have been concerned if it did not. The Co-Chiefs wanted to drill the transect first and the deep hole later. Both scenarios mandated a return to Iberia. Austin had solicited responses on this issue from PCOM and thematic panel chairs (Co-Chief and other comments were included in the Agenda Book).

Lancelot felt that PCOM had been seduced by Taylor's arguments at its April 1992 meeting and might have been hasty. The community was very pro-transect. If PCOM decided to stay with the deep hole, NARM-DPG and proponents should be assembled in October 1992 to make a recommendation. Malpas stated that he had received a different picture from talking to scientists. The argument that supported IAP-1 was technological. The highest priority on the Newfoundland side (of the Iberia/Newfoundland conjugate margin pair) was a deep hole. Malpas asked whether ODP-TAMU engineers felt the need to gain experience at IAP-1. He stressed, however, that PCOM must commit to drilling the transect eventually. Austin believed that PCOM had retained a commitment to the transect. Watkins felt that PCOM had committed to two legs at Iberia, because a single leg would probably not reach basement at IAP-1. Austin explained that one attitude was that basement might be at 2500 mbsf, but perhaps even deeper. IAP-1 alone might require several legs. In addition, some had felt that drilling only 100 m into basement at transect sites was not enough to allow determination of the state of stress and fully characterize basement. Austin emphasized that the transect as proposed would be a basement leg. Sedimentary objectives were not well developed. PCOM was faced with a multi-leg situation regardless of priority. Fisk pointed out that Duncan's letter had mentioned washing. He asked why that was not an option, if sedimentary objectives were not well developed. Austin replied that SGPP and others in the advisory structure did not support washing.

Arculus recalled that Taylor had asserted that drilling a transect on basement highs was not a good way to establish the position of the continent-ocean boundary (COB). Taylor noted that the Co-Chiefs had backed off from the idea of a test of COB position. He had not felt that the transect as proposed was a valid test. Mutter asked whether that meant that the transect approach was worthless. Austin remarked that a deep hole entailed problems with recovery and age control. Taylor admitted that he was not personally committed to a multi-leg scenario and had been trying to make something useful out of the Leg 149 by proposing the deep hole.

Larsen explained that, in planning NARM drilling, NARM-DPG had wanted to study volcanic margins and two types of non-volcanic margins (pure and simple shear). A conjugate pair of simple-shear type had been selected. Indicators of simple shear were the peridotite ridge at the COB at Galicia, large, rotated blocks of continental crust and, below those, the S-Reflector, i.e., mantle exposure and what could be a simple shear detachment surface. NARM-DPG had not recommended deep holes off Galicia because that would require penetration of >3 kmbsf. ODP-TAMU had not believed that possible. NARM-DPG, therefore, had felt constrained to maximum penetrations of 2.5-2.6 kmbsf during the next five years. Because of this, and also

because the conjugate situation was less well-constrained off Galicia, NARM-DPG had decided to examine the Iberian Abyssal Plain (IAP). At IAP, NARM-DPG copied what it could have done at Galicia, had technology allowed, by having a number of basement sites across what was supposed to be a southern continuation of the peridotite ridge. The first site (IAP-2) would confirm the existence of a peridotite ridge at IAP, to confirm the analogy with Galicia. Then, the COB would be bracketed by the other two sites. The price of switching regions was that some findings had to be reconfirmed. If NARM-DPG had been told that penetration to 3.5 kmbsf had been possible, it would have considered Galicia more seriously. NARM-DPG had considered four legs of NARM non-volcanic drilling, the first two of which were mature, and had specified a gap of at least one year, following the first two legs, in which to plan the next two. That implied that more data would be available on IAP-1 by the time it was drilled and Larsen was, therefore, relaxed about including it. He had been surprised to see IAP-1 put forward for drilling on Leg 149. At present, IAP-1 was a generic site, whose value was dependent on prior drilling. If a peridotite ridge was confirmed, NARM-DPG would prefer to move the deep site (IAP-1) seaward, nearer the peridotite ridge and COB where breakup took place. That would narrow down the age of breakup: age progressions had been observed on other margins and it was important, therefore, to drill where breakup first took place. A deep site should be drilled close to the COB in order to determine syn-rift environment and impact of break-up. Larsen felt that the deep site should probably be drilled as close as possible to the peridotite ridge to get control of what kind of basement and syn-rift sediment lithologies lay just landward of that ridge. That was where interesting information was to be found. Larsen added that, of course, it would be interesting to drill to the S-Reflector, but that would require 3 - 3.4 km penetration. Regarding drilling in the Galicia area, apart from penetration problems, Larsen noted that there had been much criticism that the S-Reflector could not be traced to the peridotite ridge and, therefore, that there was no point in trying to drill its apparent equivalent, the S'-Reflector. Larsen was not sure that such criticism was valid. In any case, NARM-DPG would still like to drill a transect there. Even if a perfect seismic tie could not be made, it was still important to have drilling control to establish the characters of both S- and S'-reflectors. If PCOM wanted to follow up on its philosophical commitment to deep drilling and get away from the DSDP approach of drilling on basement highs, it would be necessary to think in very different terms. If PCOM, however, considered 3+ kmbsf penetration unreasonable, the IAP transect should be retained, perhaps modified a little to include increased basement penetration .

Taylor said that he had not heard Larsen's argument before. He asserted, however, that IAP was not conjugate to Newfoundland Basin (NB). Austin, identifying himself as a NARM proponent, disagreed. Larsen responded that they were not exactly conjugate, but were on the same rifted segment. Taylor stated that no syn-rift sediments would be recovered at the transect sites (IAP-2, 3 and 4). IAP-1 would be more analogous to NB-4A, the primary site on the NB side. Galicia was not equivalent to IAP, where the crust was thinner and structures different (e.g., no S-Reflector). Austin, again identifying himself as a proponent, explained that that selection had been deliberate. Three transects had been considered originally. Competing reconstructions had meant that conjugate juxtapositions had differed. It had been argued that, because of availability of the best data and with more data becoming available, transects offset from true juxtaposition were acceptable, especially since the area chosen provided a conjugate pair of mid-Cretaceous age, avoiding the salt problem of Jurassic margins to the south and complementing Tertiary conjugate margins of volcanic affinity to the north. It was not perfect, but there had been a rationale for the choice. Taylor insisted that IAP-1 was most similar to NB-4A. Austin stated that the enigmatic nature of IAP crust (thin, deeply subsided, but with a non-oceanic velocity structure and no oceanic-type magnetic signature) compared to that at Galicia had been instrumental in driving original proponents. The crust might yet turn out to be oceanic, i.e., ODP might drill IAP-2, 3 and 4 and recover oceanic crust everywhere. This was a major hole in plate reconstructions in the area. Taylor agreed that the big question was the nature of transitional crust south of Galicia. It could not be assumed that a COB was present at all there. That was not the first-order problem. The nature of the crust was. The history of

rifting events would be recorded in sediments and would not be addressed by touching down on basement highs. Larsen agreed that it was important to test the nature of the crust. He thought that there was a strong likelihood that a COB was present at IAP, but could not be sure. If a peridotite ridge was present at IAP, it would be important to determine what lay landward of that ridge (e.g., would it be continental crust?). There was nothing wrong with drilling basement highs. The second NARM non-volcanic leg would look at sediments. Austin re-emphasized that ODP would return to IAP. Discussion should remain focused on the constitution of Leg 149.

Mutter noted that part of the reason for making a multi-leg commitment to NARM Non-Volcanic drilling was because Atlantic-type rifted margins were a global phenomenon. Characteristics of NARM Non-Volcanic margins were, however, beginning to seem more local. Austin responded that the difficulty was in finding well-defined conjugate pairs with data on both sides. NARM-DPG's recommendations were a compromise. Mutter remarked that the NB/IAP conjugate pair seemed symmetrical and not, therefore, a result of simple shear. Austin responded that both French and Canadian workers had proposed that the margins resulted from simple shear, but the senses of shear in the interpretations differed. Mutter asked how NARM Non-Volcanic drilling addressed passive margin evolution beyond just "what is this basement?". Austin replied that he had supported the deep hole initially because complete recovery of syn-rift sediments would provide more understanding of the subsidence history of the margin. He thought that Leg 103 had been an interesting attempt to "walk down a tilt block" and piece together a story, but that that could not be viewed as a complete sampling of syn-rift sediments. Winterer countered that Leg 103 had sampled all the way to basement, including syn-rift sediments. Austin said that the issue was whether NARM Non-Volcanic drilling was solving global problems. Malpas informed PCOM that *R/V Hudson* had obtained data from north of Flemish Cap and was putting a proposal together. He asked about technological aspects of drilling the deep site, IAP-1. Francis replied that they had been discussed by ODP-TAMU. The view was that there was no operational advantage to be gained from either the transect or IAP-1. The choice was up to PCOM. IAP-1 would, however, provide some experience which might affect subsequent NB drilling. Winterer cautioned against assuming that, because Site 398 achieved deep penetration, it was easy. Site 398 was drilled in chalk and that was not what would be drilled on NARM Non-Volcanic legs. It would be difficult to drill clastic sections beyond 1300 to 1500 mbsf. The hole would collapse before casing could be set. Austin countered that ODP must tackle those problems at some point. Mutter responded that the leg should, in that case, be an engineering leg. Austin disagreed, noting that the transect could always be drilled in the event of difficulty with IAP-1.

Jenkyns stated that he had been impressed by the argument of the Co-Chiefs that the value of the transect was to define better where the deep hole should be drilled. Von Rad added that the Co-Chiefs wanted to characterize basement before drilling a deep hole. Austin pointed out that Leg 149 would still run into time problems if it drilled the transect, particularly with deeper basement penetrations. Larsen stressed that sedimentologist members of NARM-DPG had advised against attempting to recover syn-rift sediments on the first leg. They had been in favor of basement penetration. Lancelot felt that PCOM should not make this decision. It should be returned to NARM-DPG, perhaps augmented by Taylor and others. Austin stated that NARM-DPG had already given its perspective. Lancelot acknowledged that NARM-DPG did not want a deep site. Austin countered that PCOM must decide. Francis added that staffing of Leg 149 required an immediate decision. Lancelot proposed, in that case, sticking with the transect.

Larsen thought that part of the problem at the April 1992 PCOM meeting had been that PCOM picked IAP-1 specifically. PCOM should have stated its goal of drilling a deep site and asked the Co-Chiefs to come up with a site. They would not have chosen IAP-1. Austin suggested that the Co-Chiefs would still have preferred the transect.

Dick noted that Leg 149 had been characterized as a basement leg, but warned that it might encounter sills and never reach basement. Austin agreed that 100 m basement penetration might be inadequate. Taira, on the other hand, pointed out that this type of "touch and go" basement penetration had defined the peridotite ridge and produced very important science. Dick persisted with the view that drilling might encounter 100 m of sills and learn little. Austin reported that G. Boillot (Leg 103 Co-Chief) believed that basement penetrations of at least 300 m were required. Winterer asked whether anomaly M0 was seen. Austin replied that it was not clear near the proposed transect. Taira advocated penetrating basement as deeply as possible at transect sites. Dick asked why peridotite fabrics were considered so interesting. Winterer replied that it was consistent with the unroofing hypothesis of Boillot that the peridotite had been through several stages of deformation at various temperatures. As the peridotite progressed upward, it was progressively deformed and those temperature and deformation regimes left an imprint on the rock as relict textures. Dick said that that was true of peridotite ridges everywhere on continental margins. Drilling would simply replicate the story already revealed at numerous other localities. Austin stated that the difference was that the tectonic regime was well-constrained at IAP. Dick reiterated that the story was one seen over and over again in diapiric emplacement of high-temperature peridotites. Little new would be learned. Austin replied that the implication was that this was not high-temperature emplacement. Dick stated that it started at high-temperature and went to lower temperature. Austin felt that the temperature had not been very high.

Malpas felt that PCOM was getting into a DPG-type discussion. PCOM had had something relatively simple to decide upon, but if discussion of conjugate margin drilling in general was felt necessary, PCOM should refer the matter back to NARM-DPG. Austin replied that NARM-DPG had been disbanded. If PCOM, however, wanted to have a major rethink of the problem, including the entire philosophy of conjugate margin drilling, that might be a way to proceed. Jenkyns felt that PCOM was avoiding the issue and asked whether making Leg 149 a transect, with deeper penetration if necessary, would strengthen the scientific return. Austin stated that he would be more comfortable with the transect if it achieved greater basement penetrations. Larsen said that he had always been concerned about drilling the proposed oceanic high (the most seaward site, IAP-3B). It might be best to concentrate on IAP-2 (supposed peridotite) and IAP-4 (proposed continental crust). Perhaps the sites could be moved off highs a little to try to recover some syn-rift sediment. Austin noted that that was the order of drilling proposed by NARM-DPG and advocated increased basement penetration. Larsen agreed.

Von Rad expressed the opinion that, if PCOM was committed to a deep site at IAP-1 in future, it would be a good idea to start the hole on Leg 149. Basement could not be reached in a single leg. Austin replied that that must be a decision made by the Co-Chiefs, based on time available. Mutter pointed out that it would not be clear where to place the deep site until after the transect had been drilled. That decision could not be made aboard *JOIDES Resolution*. Austin added that there would be insufficient time to start a deep hole if PCOM specified deeper basement penetrations on the transect. He asked whether there were any other impassioned pleas for drilling a deep hole. Taylor asked how this affected technological development. Would ODP-TAMU now require a RFP for deep drilling? Austin noted that a deep NB site (NB-4A) would perhaps be scheduled during the December 1992 PCOM meeting. Francis explained that a deep drilling RFP would not be required for that depth of hole. Austin added that the goal of a RFP for deep drilling would be investigation of much deeper holes. ODP-TAMU should be aware, however, of PCOM's likely intent to schedule a deep NB hole. Storms confirmed that ODP-TAMU viewed both NB-4A and IAP-1 as technically drillable (and had said that at the April 1992 PCOM meeting), depending on hole conditions. Austin noted that NB-4A was technically more challenging then IAP-1 because of strong currents associated with the Gulf Stream. Storms agreed, adding that ODP-TAMU would be losing experience with long casing strings, etc. by not drilling IAP-1. That might mean doing that for the first time at NB-4A.

Austin suggested that a PCOM motion should specify a minimum of 300 m of basement penetration and also the order of transect sites, i.e., IAP-4, 2, 3/3B. Larsen pointed out that 300 m of basement penetration would not be required if granite was recovered. Austin responded that, in that event, the Co-Chiefs could "call the beach." Storms informed PCOM that 300 m of basalt penetration would require re-entry and that, therefore, probably only two sites could be drilled on a single leg. Taylor stated that, in that case, PCOM would effectively be instructing the Co-Chiefs to drill two basement sites. Austin responded that PCOM was specifying the order of drilling. Three sites could be drilled on Leg 149 if there was time. Francis agreed with Storms' assessment, adding that deep water over the sites would result in long trip times. Austin said that that could not be helped.

Jenkyns read a draft motion. Taylor felt that PCOM could not direct the Co-Chiefs to drill a transect of three sites in the time available. Austin, therefore, proposed that transect sites simply be listed in priority order, without specifying that all be drilled. Larsen reiterated that any PCOM motion should not force the Co-Chiefs to drill 300 m into gneiss or granite. Austin countered that drilling should not stop when only a fragment of granite or gneiss had been recovered. Fabric was also significant. Von Rad suggested adding a statement to the motion to the effect that PCOM was interested in drilling a deep site at a later date. Austin responded that PCOM was already on record as accepting NARM-DPG's recommendation; no further statement was needed. Arculus felt that more of PCOM's rationale should be included in the motion. Austin noted that that would be obvious from the minutes. Arculus felt that drilling might as well be stopped, if isotropic granite was encountered. Taylor countered that peridotite might underlie the granite. Austin continued to argue that shallow basement penetration would be inconclusive. Pyle stated that not all of PCOM shared that view. Taylor agreed with Austin's assessment of the importance of basement penetration. Arculus thought that specifying depth of penetration tied the Co-Chiefs' hands too much. He suggested adding flexibility by specifying lithologies and not just a minimum depth of penetration. Larsen suggested maximizing basement penetration in order to describe the nature of basement. Austin expressed concern that if PCOM did not specify some basement penetration depth, the Co-Chiefs might be tempted to move to the next site. Dick agreed. Dauphin suggested that Austin, as a proponent, turn the chair over to Lewis for the duration of the discussion. Austin replied that he was not speaking as a proponent.

Mutter noted that PCOM must accept the likelihood that only two sites would be drilled. That was not a transect. Austin acknowledged that one leg would not provide a transect, but ODP would return to IAP. Mutter remarked that the total number of legs seemed open-ended. Austin stated that NARM-DPG had recommended four non-volcanic legs, with a reevaluation after the first two. Larsen did not feel that PCOM's adjustments to the transect would expand the NARM program too much.

Jenkyns read a revised draft motion. Austin proposed specifying drilling into basement deeper than the 100 m requested by NARM-DPG. Larsen felt that the motion should express some of PCOM's rationale. Austin reiterated that that would be in the minutes. Fisk noted that the motion made no mention of Larsen's suggestion of moving sites slightly off basement highs in order to recover more sediment. Austin countered that that would be micromanagement. Besides, syn-rift sediments should be drilled in a deep rift basin and not on the flanks of basement highs, where only a little could be recovered. PCOM finally passed the following motion.

PCOM Motion

After consultation with interested members of the community, including Panel Chairs, members of PCOM and others, PCOM has reconsidered its decision

made at the April 1992 PCOM meeting and endorses the original recommendation of NARM-DPG to drill a transect across the Iberian margin, in the priority order IAP-4, IAP-2, IAP-3, and alternates. PCOM furthermore charges the Co-Chiefs to attempt penetration of the basement to several hundred meters in order to increase the chances of recovering diverse lithologies containing a record of tectonic evolution.
Motion Jenkyns, second Taira Vote: for 13; against 3; abstain 1; absent 0

LEG 150: NJ/MAT

Austin explained that the US Office of Naval Research (ONR) was interested in casing and instrumenting one or more holes in NJ/MAT. A proposal by T. Yamamoto (U. Miami) to ONR was included in the Agenda Book (Leg 150 section). ONR was keen to case as many as four sites, probably on the outer shelf. ONR might also wish to drill an offset (by 500 m) hole to ~200 mbsf at one site for tomographic studies. ONR would pay for the work. A formal ODP proposal had not been requested. Such a proposal could be evaluated in December. Austin stressed that Leg 150 was already short of time. The eight sites that were drillable (if PPSP approved them all) would require 50 days on site, whereas Leg 150 had only 40 on-site days. Austin asked whether PCOM supported ONR's plans for Leg 150.

Pyle stated that ODP was not out to sell time on *JOIDES Resolution*. The proposal should have come up through the thematic panels in the normal way. Then, if it was endorsed, time would be given free of charge. Lancelot recalled that USGS had wanted to buy time during DSDP. That request had been denied. He asked whether there would be any strings attached to publication and data availability. Austin replied that ONR understood that there could be no such strings. In response to a question from Mutter, Austin said that, in addition to ONR, Yamamoto would be involved. He would instrument cased holes. Winterer cited a UK request for special coring for a nuclear waste program. That request had been denied. In contrast, a DARPA program, which had come "in through the front door" had been approved on its scientific merit. Austin said that it might be possible to get a proposal submitted in time for the fall 1992 thematic panel meetings. Even if such a proposal was highly-ranked by thematic panels, however, the time issue would remain. Blum, however, pointed out that the deadline for fall 1992 proposal submission had passed. Austin agreed. Francis asked why it was not acceptable for ODP to accept money. Pyle replied that selling time would invalidate the indemnity provided to ODP by the US Congress. Aside from that, selling time might start a "free-for-all".

Austin noted that this proposal was a supplemental science proposal that would predictably involve subtraction of objectives from an existing leg. PCOM had been negative toward such proposals in the past. ONR, however, had asked whether the proposal could augment NJ/MAT science, a legitimate question. Dick observed that Yamamoto's proposal was dated 26 June 1992 and was, therefore, a valid ODP proposal for fall 1992. Austin countered that Yamamoto's proposal had been sent to ONR and was included in the Agenda Book for PCOM information only. Mutter felt that whether it was worth modifying Leg 150 was a thematic panel decision. Austin pointed out that, if the thematic panels endorsed the proposal, it might already be too late to modify the leg. Taylor questioned the wisdom of including the ONR work when there was insufficient time on Leg 150 to do high-priority work. Watkins added that the Co-Chiefs would take a dim view of being asked to do this work. Austin countered that the decision was not wholly up to the Co-Chiefs. Taylor noted that the ONR work could not be done in return for payment, but only based on scientific merit. It was now too late for it to be considered and there was, in any case, insufficient time on Leg 150. Austin reminded PCOM that Leg 150 faced safety problems. There might be time if only four sites were judged safe for drilling. Blum noted that it had been estimated that eight sites would require 76 days. Austin responded that that might be an unrealistic estimate. He added that the proponents had

originally miscalculated the time on site required. Blum felt that cutting the 40 days further would kill the program. Austin stated that PCOM might kill the program if too few sites were approved by PPSP.

Austin stated that he would tell ONR that PCOM was interested in the proposal, but that it would have to go through thematic panel review, requiring about one year. Mutter added that ONR should be encouraged to propose work in the future. Austin felt that ONR's interest had been very area-specific. Mutter countered that ONR might be interested in other areas. Francis stated that the ONR work would require 27 hours/cased re-entry hole and required 1-4 cased holes. Its objectives were very applied and related to anti-submarine warfare. Existence of an array of holes for cross-hole work might, however, be relevant to a Purdy et al. proposal on the nature of oceanic crust. Dick asked whether there might be any problem with Russian access to results of the ONR work. Pyle replied that that was not relevant. Berger commented that the ONR proposal dealt with ocean acoustics and was good science.

Austin reiterated that he would inform ONR that it was too late to change Leg 150 and that there was, in any case, insufficient time available on that leg. He added that, in the event of major problems arising at Leg 150's safety review, PCOM might decide to drill something else (e.g., TAG).

967. Old Business; Continuing Issues

IN SITU PORE-FLUID SAMPLING RFP

Austin recalled that, at its December 1991 meeting, PCOM had established a steering group to study the issue of *in situ* pore-fluid sampling. The group met in early April and had prepared a preliminary RFP in time for the April 1992 PCOM meeting. PCOM took no action at that time, largely because the status of OPCOM funds was uncertain. Since that time, the RFP had been finalized (Agenda Book, white pages 333-344). The financial situation was, however, no clearer. The pore fluids community wanted to start making progress immediately. The view was that ODP was back where it started, without a viable downhole pore-fluid sampling device. The RFP was for a feasibility study of tool design and not for construction of a tool. J. Gieskes had taken the lead at the second meeting in P. Worthington's absence. DMP had endorsed the RFP twice. PCOM owed them some action.

Taylor stated that the steering group had done a lot of work and that the RFP was good. Austin agreed, adding that they had responded rapidly. He asked whether PCOM wished to issue the RFP without backing by funds. Dick suggested issuing it in FY94 instead of FY93. Taylor thought that the RFP need not specify a dollar amount. Austin responded that all that might be needed would be statements of interest from bidders. A list of potentially interested parties had already, however, been prepared. Austin doubted that actual bids could be expected unless the RFP contained some sense that money was available. Pyle did not feel that ODP should reveal how much money was available, but agreed that no bidders would respond if there was no money. Taylor suggested issuing the RFP in January 1993 and asking for responses by 1 October 1993 (i.e., FY94). Becker felt that such a 10-month delay would be unacceptable to the community. In response to a question from Austin, Becker said that the only amount mentioned in connection with the RFP was ~$100,000 from the OPCOM discussion. Dick noted that there was a fund within NSF for such developments, which had commercial value. Austin responded that that would entail asking volunteers to write a NSF proposal. PCOM could say that it could not issue the RFP until FY94 because of lack of funds and, in the meantime, ask that a NSF proposal be written. Mutter agreed that, if a RFP was issued, the assumption would be that the successful bidder would be funded. Austin felt that it would be irresponsible to issue the RFP without funding. Mutter noted that one reason to proceed with

the RFP was to find out how much it would cost. Watkins recommended against issuing the RFP. Taylor stated that PCOM wanted to go ahead; the uncertainty was timing. He did not wish to "pour cold water on" all the effort. Watkins suggested that the RFP be considered along with the FY94 budget. Taylor noted, however, that it would be necessary to know how much the feasibility study would cost.

Austin noted that most RFPs contained language to enable bidders to assess the level of commitment. Some bidders might provide enough information to estimate cost, in the hope that some money would be available sometime. Becker said that Gieskes might not want to wait. Berger said that if pore-fluid sampling was important, PCOM should consider the next step. Taylor proposed issuing the RFP in May 1993. Providing two months for bidders to respond and 2 months to decide on bids would allow funding on 1 October 1993. Austin stressed that that would make the feasibility study a place-holder in the FY94 budget. In response to a question from Lewis, Becker said that it was envisioned that the feasibility study would require 3-4 person-months. It might cost <$100,000. Austin expressed support for the FY94 budget place-holder concept. The RFP was good and represented the way to proceed. Issuance should be delayed until Spring 1993, for starting a contract on 1 October 1993. Becker asked whether this represented a real commitment of FY94 funds. Austin replied that it did, but that it was expected that the cost would be ~$100,000 or less. PCOM would have to reassess the situation if the cost turned out to be much greater. PCOM reached the following consensus.

PCOM Consensus

PCOM commends the Steering Group for *In Situ* Pore-Fluid Sampling for identifying important opportunities in advancing research on pore fluid sampling and outlining the technology developments required. PCOM is strongly in favor of pursuing this research and development and intends to issue the necessary RFP in spring 1993 for funding 1 October 1993.

DEEP DRILLING RFP

Austin explained that, at its December 1991 meeting, PCOM had commissioned development of a RFP for deep drilling studies. A revised RFP would probably be considered by TEDCOM at its October 1992 meeting. The issues were maximizing capabilities of *JOIDES Resolution* and, perhaps, considering objectives beyond the capabilities of *JOIDES Resolution*, e.g., Moho and S-Reflector, that might require a ~6 km hole. The issue could be deferred. Lewis suggested that ODP-TAMU circulate the existing document *Engineering for Deep Sea Drilling for Scientific Purposes* to PCOM, which could then discuss the issue. Austin agreed. It was unlikely that there would be any action on this matter before FY94. It could be an agenda item for the December 1992 PCOM meeting. Francis agreed that it involved very long-term issues, beyond *JOIDES Resolution* and the next 4-5 years.

Summer Meeting JOIDES PCOM
Thursday, 13 August 1992

LEG STAFFING (ODP-TAMU)

Baldauf reported on staffing of upcoming legs: Leg 146, staffing completed; Leg 147, staffing completed; Leg 148, staffing underway, invitations to be sent within the following week; Leg 149, staffing underway (on hold pending PCOM decision on leg objectives); Leg 150, staffing underway, invitations to be sent the following week; Leg 151, final nominations required, staffing should be complete by end of August 1992; Leg 152, final nominations required, staffing should be complete by end of August 1992. Baldauf presented a shipboard participant tally (for legs 101-145), by country, covering 1101 participants (Appendix 8).

968. Reports of Co-Chairs (or representatives) of Liaison Groups II

NANSEN ARCTIC DRILLING PROGRAM

Brass circulated copies of the NADP science plan. He explained that NADP was a planning group, without a drilling ship at present and relying on future developments. The science plan contained information on 19 proposed drill sites. The Gakkel Ridge was known to be a spreading center, but the nature of the rest of the Arctic Ocean basin was poorly understood, e.g., basement ages in the Makarov and Canada basins were unknown.

NADP's initial goals involved three sites close to the edge of the ice and, therefore, relatively easy: 1) Northern Yermak Plateau (ODP would try to drill on the southern Yermak Plateau); 2) Mackenzie delta area (Canada); 3) Chukchi Plateau. Most were in fairly shallow water (~1000 m).

Another future site would be located on Lomonosov Ridge. Seismics from a 1991 *R/V Polarstern* cruise showed layer cake stratigraphy with a record of climate at the pole over the last 40 m.y. in ~960 m water depth. Drilling there would provide understanding of the mechanism for creating a warm Arctic. The heating mechanism was currently a mystery. *R/V Polarstern* had used a short streamer to collect the seismic data and had followed the icebreaker *Oden.*

NADP would be holding a planning meeting in September 1992 , prior to the paleoceanography conference in Kiel, Germany. It was hoped to begin with sites near the ice edge. A study had recommended use of a barge towed by *Oden.* Further development would follow as resources became available.

Mutter expressed surprise at hearing Brass characterize Gakkel Ridge as known. Brass responded that the origin of the basin was known, but not all of the details. Mutter noted that it was of interest because the spreading rate was very slow, transform faults were absent and the ridge disappeared against continental crust. Brass noted that Lomonosov Ridge was also exceptional in being a cleaved, 80 km-wide strip of continental crust.

Austin recalled the previous day's discussion of strengthening ODP ties to InterRIDGE and asked whether ODP was doing enough with NADP. Brass felt that ties between ODP and NADP were good. There was a lot of overlap. As long as ODP could operate only one drill-ship, opportunities were limited. Discussions had been held with Sedco on what *JOIDES Resolution* could do in ice. The time would eventually come for proposals, panel discussions and consideration of curation. In response to a question from Taylor, Brass said that he had

originally seen NADP as a successor to ODP. It could, however, be an additional platform operation. Francis commented that the paring of funds for an ice support vessel for Leg 151 would result in use of a smaller vessel. That was disappointing. Austin responded that he did not think that use of *Oden* had been a realistic possibility. It would cost much more than $1.1M. An icebreaker had never been the intent. Francis agreed that $1.8M had been the original quote for *Oden*, but felt that its owners might still lower their original quote.

Brass pointed out that there were no floating icebergs in the Arctic, unlike the Antarctic, but the Arctic pack ice made operations difficult. A UNOLS subcommittee report on use of a nuclear submarine for oceanography was available from the UNOLS office. It had inspired some other action. Russia had expressed interest in using one of its submarines. Multibeam systems on submarines had been discussed, but there had been no mention of seismics. Brass felt that they should have at least SCS capability. The US Navy had also expressed some interest in conducting Arctic research from a submarine. UNOLS also had plans for an Arctic research vessel. The design committee had met and the plans now called for a 300' vessel. In order to build a *Polarstern*-type vessel, NSF would need a partner. NOAA was a possibility. The US Coast Guard was refitting an icebreaker to have some scientific capability.

Austin said that ODP had discussed alternate platforms. He asked about NADP's time frame. Brass replied that it was his understanding that *JOIDES Resolution* was to be ODP's primary platform during the first 5 years post-renewal. He hoped that ODP would be looking for an appropriate platform for Arctic drilling after that. Such a platform would not necessarily be needed all year, but mobilization costs would be high. When the time came to plan, it would be important to consider balance. An Arctic platform might also be able to drill in shallow water, e.g., atolls, NJ/MAT.

969. Membership and Personnel Actions

Austin noted that most panels had not met since the April 1992 PCOM meeting. Therefore, there were few nominations. PCOM would examine panel membership with a view to any necessary modifications. He explained that PCOM usually took nominations from Panel Chairs, but could nominate to augment panel expertise. Members usually served for three years. Panel Chairs were given three extra years from the time of their appointment as Chair.

LITHP

Malpas stated that a C-A replacement for J. Franklin was still pending. Malpas would, in any case, be attending the next LITHP meeting. Austin noted that D. Wilson (UCSB) had replaced J. Phipps-Morgan, J. Tarduno (SIO) had replaced Smith and Y. Kristofferson (ESF) had replaced S. Cloetingh. M. Coffin (UTIG) had been added. McClain and Brocher would probably rotate off after the fall meeting.

OHP

Bralower would probably rotate off after the fall meeting. Malpas noted that R. Carter (C-A) would replace P. Davies. Watkins expressed concern about loss of sea level expertise if T. Loutit (moving to BMR, Australia) left OHP. Austin responded that Carter had that expertise. Lancelot stated that M.-P. Aubry probably would not now be replacing E. Vincent (F). He offered to look for a sea level person. Austin said that he could pass on to M. Delaney (OHP Chair) PCOM's concern about sea level expertise and ask for nominations for the December

PCOM meeting. Jenkyns noted that OHP would lose Mesozoic expertise with Bralower. Austin agreed that that should also be flagged.

SGPP

N. Christie-Blick would probably rotate off after the fall meeting. Von Rad pointed out that W. Hay was a US representative and not German as listed in JOIDES Office overheads and *JOIDES Journal*. Austin acknowledged that error. Lancelot stated that J. Boulègue (France) would be replaced later in 1992.

TECP

C. Beaumont (C-A) had declined his nomination. PCOM agreed on M. Steckler (LDGO) as replacement nominee. S. Agar (Northwestern) and U. Ten Brink (USGS, Woods Hole) had joined TECP. C. Doglioni (ESF) had replaced H.-C. Larsen.

Lancelot stated that J. Borgois (F) would step down. There may be a replacement. Von Rad reported that R. von Huene (G) would replace J. Behrmann after the next meeting. Dick noted some concern that TECP needed increased ridge expertise. Austin agreed that that might be useful, especially since Karson was often absent.

DMP

G. Fryer had been nominated to replace R. Wilkens. Worthington would step down as Chair after the December 1992 PCOM meeting and stay on DMP for one more year. DMP members had nominated P. Lysne (Sandia) as replacement Chair. Austin stated that PCOM could act now to confirm Lysne or defer action until the December 1992 PCOM meeting. Becker stated that Lysne was very capable. Pyle urged PCOM to act now to maintain continuity, noting that Worthington was very busy. Austin favored Lysne, pointing out that Lysne was already active on DMP. JOI, Inc. was under the gun to get logging RFPs underway and it was, therefore, important to have a replacement Chair who understood that. PCOM endorsed Lysne as replacement Chair. Arculus reported that H. Crocker (C-A) would be replaced by H. Salisch.

IHP

T. Moore (Michigan) was rotating off. Lancelot expressed interest in having more recent Co-Chiefs as members of IHP. Austin agreed. IHP had wanted to include recent Co-Chiefs for short terms of membership. Those members would probably change after the fall meeting. Mutter asked whether more computer expertise should be added, in view of projected developments in data handling. Taylor thought that Gibson (IHP Chair) wanted R. Wilkens, who was rotating off DMP, to join IHP. Wilkens was computer literate. Austin stated that PCOM could make IHP larger. Malpas pointed out that Gibson was not the C-A member. That had been N. Rock. Malpas was looking for a replacement and would try to find a computer person. Lancelot added that A. Schaaf (F) would be stepping down and that he could also seek a computer-literate replacement. Taylor pointed out that many members would be rotating off after the fall meeting. Austin stated that Gibson would provide nominees. Berger suggested adding computer users. Austin replied that that had been the idea of adding recent Co-Chiefs. In response to a question from Lancelot, Austin stated that J. Saunders (ESF) had rotated off IHP.

Lancelot asked whether it was usual that Panel Chairs did not represent their countries. Austin replied that they were generally nominated for their expertise. Blum felt that PCOM should address that issue. Panel members tended, on becoming Chair, to claim that they no longer represented their country and request another member. Malpas stated that, in IHP's case, it had been a decision of IHP and PCOM at that time. Austin said that PCOM had always nominated Panel Chairs for expertise. It had to be done on a case-by-case basis. It was a matter of who paid members' expenses. Mutter asked whether, in that case, there were no rules. Lancelot stated that international partners were entitled to a member. Blum explained that Germany had had two members on SGPP when E. Suess was Chair. When J. McKenzie (ESF) became Chair, she had felt that she could nominate another ESF member. Austin stated that that was acceptable, if ESF paid. Panel Chairs constituted an exception. Taylor felt that Panel Chairs should not be exempt from representing their countries. Malpas asserted that each member country had the right to nominate a member. If PCOM made that member a Panel Chair, the country could nominate another member if it was willing to pay. Austin reiterated that it had always been handled on a case-by-case basis. Larsen stated that that constituted a problem for ESF, because of the large number of partners within ESF. ESF had been about to replace McKenzie as SGPP member, but then she was made Chair. He asked whether ESF could add a member if it was willing to pay. Austin replied that the question would have to be put to SGPP. Taylor felt that if a person was already on a panel, that person should represent their country. Blum said that ESF should get an answer now because McKenzie had raised the issue. She was under the impression that SGPP could not have another member. Austin stated that Larsen could bring a nominee to PCOM. Malpas countered that nominees must come from the panel and not from PCOM. Larsen noted that PCOM had heard about a lack of sea level expertise. ESF could supply that to SGPP. Austin recalled that sea level fell under the mandate of OHP and SGPP. SL-WG had felt that sea level tended to fall through the cracks. Perhaps sea level expertise should be augmented on both SGPP and OHP.

PPSP

No action required.

SMP

SMP would like a sedimentologist to replace A. Richards (ESF). Several members would rotate off after the fall meeting. Austin noted that SMP was a small panel and that PCOM might wish to augment its membership, particularly related to data handling issues.

Jenkyns explained that E. Thomas was now a US member, and no longer UK. Von Rad pointed out that there was no German member, adding that Germany could nominate a data-handling person or a sedimentologist. Taylor noted that J. Rhodes would be rotating off and that M. von Breymann (Germany) would be a good replacement with XRF expertise. Austin reiterated that augmentation of panel membership, in addition to replacement, was possible. Mutter recalled that there had been concern about underway geophysics when SMP was first formed. R. Whitmarsh (UK) was on SMP for that reason. He asked whether it was still an issue. Taira stated that H. Tokuyama (Japan) had that expertise. Dick suggested J. Erzinger for rock description techniques. Austin replied that Erzinger was on LITHP and, therefore, ruled out. Brass thought that rock description had been under IHP. Austin replied that SMP had been formed subsequently and that SMP and IHP worked well together.

SSP

K. Kastens (LDGO) would take over from R. Kidd (UK) as Chair after December 1992. M. Sinha (UK) would replace Kidd on SSP. Lancelot offered to seek someone with expertise in high-resolution seismic experience as replacement for G. Pautot (France), who was rotating off. Austin stated that, with its new meeting schedule, SSP had assumed greater importance with regard to flow of proposals. Dick suggested adding a petrologist to remedy poor communication with SSP on offset drilling. Blum responded that SSP was aware of the difficulty and was seeking someone who could provide advice on submersible data.

TEDCOM

Sparks had been reelected as Chair. Like PPSP, TEDCOM was immune from rotation and was viewed as a panel of outside experts. Malpas stated that K. Manchester (C-A) would be replaced by A. Williams before TEDCOM's October 1992 meeting. Brass noted that TEDCOM member A. Skinner (UK) was also the new Chair of the Technology Committee of NADP. That would provide for good communication and overlap between programs.

DETAILED PLANNING GROUPS AND WORKING GROUPS

Austin reminded PCOM that both OD-WG and SL-WG would like to have some continued life. Taylor advocated terminating both. He thought that both had done good jobs and that there was no need for either to continue. Malpas felt that, in the absence of any LITHP response, disbanding of OD-WG should be delayed until after LITHP had met in order to get LITHP's reaction. Mutter added that TECP's response was also required.

Becker noted that WGs were set up when thematic panels lacked certain expertise. WGs were temporary. The best way to keep them alive was to ensure good representation on thematic panels. Austin reminded PCOM that the cost of extra meetings was an issue. If PCOM decided not to disband OD-WG and SL-WG now, it would be an agenda item at PCOM's December 1992 meeting. Larsen felt that PCOM must encourage panels to take responsibility back following WGs. Dick did not foresee much work for OD-WG pending HD (Leg 147) drilling. A DPG might be needed in the future. Malpas proposed deferring action until December 1992.

Watkins felt that SL-WG should be disbanded, but noted some concerns. Sea level was a diverse issue with no "champion" among thematic panels analogous to LITHP's support of Hole 504B and OHP's support of Neogene studies. Stratigraphic signature of sea level change fell under SGPP's interests, but amplitudes and rates might be more relevant to TECP. Climate, deep sea signatures and proxies, together with biostratigraphy, were within OHP's mandate, while mechanisms might fit within those of LITHP and TECP. Sea level studies constituted a major ODP contribution to the Global Change program. Most ODP efforts were not well linked to contemporary environmental problems, but sea level provided such a link. Greater focus and coordination of sea level issues were needed. Possible strategies were: 1) a separate entity analogous to InterRIDGE and NADP, or 2) coordination within ODP. ODP was the natural venue, as it combined work on continental margins, the deep ocean, atolls and guyots and biostratigraphy, i.e., everything except land studies. Austin added that even land studies were being incorporated into Leg 150. Watkins concluded that SL-WG should be disbanded, but that there was a need for something else. He preferred that it remain within ODP.

Austin read a motion, suggested by Larsen, charging thematic panels to name watchdogs for major thematic, multi-leg programs and provide annual written reports to PCOM on progress. Austin stressed that panels should consider complex programs. There were gaps in follow-up for NARM, Sedimented Ridges and now offset drilling and sea level programs. Austin recalled that offset drilling and sea level were two of the themes originally proposed by STRATCOM for focusing ODP. Lancelot agreed. WGs were ways to stimulate interest. After WGs, it was up to thematic panels. If thematic panels could not generate interest themselves, they had to request another WG. Austin explained that, when regional panels were discontinued, thematic panels had been overworked as a result of having to review proposals. Proposal review now occupied most of their time and they could rarely engage in discussion of longer-term issues.

Malpas felt that identifying watchdogs would maintain long-term memory. Austin agreed, adding that TECP did that well. Blum suggested that one member from each of PCOM, SSP and a thematic panel would constitute a good combined watchdog network. Pyle wondered whether PCOM meetings should have an extra day for discussion of longer-term issues. He was not in favor of the "super-PCOM" idea, but stated that PCOM must respond. Austin noted that PCOM had discussed focusing ODP (i.e., STRATCOM in 1990-1991). Sea level and offset drilling were two of the themes chosen for focusing. The view then was that proposals were leading to a natural focusing. Lancelot asked why JOIDES should not have a panel structure reflecting those themes. Austin replied that PCOM had then been opposed to such focusing. Lancelot responded that other programs had panel structures that changed. The JOIDES panel structure was more general to fields than to themes. Austin pointed out that the Advisory Structure Review Committee would attend PCOM's December 1992 meeting. He asked whether PCOM wanted to discuss this issue before the review committee.

Malpas reminded PCOM that an attempt had been made to focus ODP at the time of writing the LRP. When the results were taken to the thematic panels, the number of areas of focus expanded from 4 to 16. People were afraid of leaving topics out. The JOIDES panel structure was not flexible, but had "weathered the storm well." He felt that PCOM should discuss this issue before the Advisory Structure Review Committee, rather than just letting them observe how PCOM worked. He felt that the existing structure worked well. Some flexibility could be added at the panel level, however, based on high-priority objectives. Austin commented that it was easier to invite guests to thematic panel meetings than to convene new meetings.

Larsen explained that he had written his motion to avoid PCOM getting involved in micro-management and to push the issue back to the thematic panels. In addition, multi-leg programs made it necessary to remind thematic panels that monitoring those programs was a new task for them, once DPGs and WGs had been disbanded. Austin stated that part of the reason for rigidity of the panel structure was that PCOM asked thematic panels to do a great deal of work in proposal review. Malpas responded that, if PCOM "bit the bullet" and provided more direction, it would reduce the range of items thematic panels would have to deal with. PCOM had to direct more, rather than pushing everything down to the panels. Taylor suggested recognizing the STRATCOM themes as primary themes of ODP and, in line with Larsen's motion, specifying that thematic and service panels and PCOM have watchdogs on each of these themes. That would not require extra meetings. Austin replied that the major fear in 1990-1991 had been that some groups would feel disenfranchised if their themes were not on the short list. Perhaps that was part of "biting the bullet." Lancelot agreed, adding that brainstorming occurred in DPGs and WGs and not in thematic panels, which had insufficient time.

Brass explained that he had been against focusing, when he had been a PCOM member, because the LRP had been the basis for renewal. He felt that focusing added to rigidity by

dropping themes off the list. Perhaps this burden did not belong within the JOIDES structure. The real job of that structure was to provide an honest judgment of how to use the drillship by judging proposals. The groups putting together focused programs were those such as NADP and InterRIDGE. JOIDES panels could not be both "honest brokers" and direct ODP. Mutter agreed, but added that an intellectual basis for making honest judgments was required. PCOM had not defined the problems at panel level. Brass stressed that PCOM should not stipulate for which themes it wanted to receive proposals. Berger felt that the JOIDES structure could not be a mini-COSOD. Panel members supported their fields and panel response depended on panel composition. A COSOD provided stimulation for themes and represented the general community. Austin responded that EXCOM had not had much sympathy for another COSOD.

Larsen pointed out that his motion said nothing about specific themes, merely that communication between thematic panels and PCOM be improved, especially with regard to multi-leg programs. TECP, for example, had a broad mandate. It should spend more time on main objectives. Austin stated that PCOM had known that thematic panels would be overworked. PCOM could add an extra day to thematic panel meetings, but there was a limit to how much volunteers would do. Panel Chairs had already requested payment. Becker recalled that, during STRATCOM discussions, he had been sympathetic to Brass's view and against focusing ODP. Now the drilling schedule fell within focused themes that had resulted from thematic panel rankings. He, therefore, felt that the JOIDES structure was working well. Austin noted that thematic panels needed to consider post-drilling developments for multi-leg programs. Malpas stated that a consensus on focusing would never emerge from a COSOD. STRATCOM's focused list of themes had represented community feeling. If ODP wanted to do big science with restricted equipment and funds, somebody would have to focus its effort. Practitioners of each field within the community wanted focusing, but on their own interests. PCOM should prioritize themes. Dick suggested that PCOM should spend more time discussing those themes and appoint, e.g., sea level and offset drilling expertise to thematic panels. That would focus the thematic panels and still leave the system open as panel members also had other interests. Austin agreed, but added that PCOM would need nominations from thematic panels. He said that he would inform Panel Chairs. Mutter pointed out that PCOM currently focused ODP in the scheduling process, but that it also tried to schedule thematic panels' top-ranked proposals. Austin agreed, but noted that those top-ranked proposals generally represented STRATCOM themes, because those themes had been generated in part from thematic panel white papers. ODP was probably being focused anyway, but PCOM needed to be aware of the need to focus.

Lancelot expressed sympathy with Dick's suggestion. France had proposed a committee ("permanent COSOD") to do what PCOM did not have time to do because it was so involved in planning. That committee could simply be PCOM itself, meeting once/year for a scientific steering session, though Lancelot felt that the way PCOM members were nominated might preclude that, i.e., non-JOIDES representatives might be needed. Brass questioned how the JOIDES structure could promote a focused ODP while maintaining the ability to act as independent judges. USSAC workshops performed the function of providing focused advice within the US system. Independence of the judging process must be maintained. Lancelot countered that, as the system was presently constituted, ODP could still operate even if only bad proposals were being submitted and that was why it was important to focus. Brass responded that that was not happening within ODP. Mutter thought that there was a perception that ODP was trying to do a little for everyone. Because of that, ODP did not only drill the best proposals.

Von Rad felt that scientific steering should remain with thematic panels and that PCOM liaisons should evaluate the process. SGPP had set aside a day for discussion of scientific themes.

SGPP would generate proposals for important themes (e.g., gas hydrates) for which no proposals existed. Von Rad added that he would rather have thematic panels take the lead than PCOM. Austin reminded PCOM that thematic panel members read proposals, whereas PCOM members did not. Blum commented that SGPP was a good example of a thematic panel trying to stimulate the community to write proposals (e.g., gas hydrates). Other panels tended to simply prioritize proposals, which could potentially result in poor proposals being drilled. Austin stated that it would be good for PCOM to get panel input and set aside some time to discuss progress reports on particular initiatives. PCOM passed the following motions.

PCOM Motion

Acknowledging the great importance and impact of large, thematic, multi-leg programs, PCOM charges thematic panels to follow continuously and evaluate such programs by naming watchdogs as appropriate and by making annual written reports to PCOM on program progress and performance and the possible need for program changes at the scale from drilling leg priority to detailed siting.
Motion Larsen, second Lancelot Vote: for 15; against 1; abstain 0; absent 1

PCOM Motion

PCOM charges the relevant thematic panels to evaluate the reports of the Offset(-Section)-Drilling and Sea-Level working groups in the immediate future. The two working groups will remain alive, but inactive, until the December 1992 PCOM meeting, when a final decision on their fate will be made.
Motion Jenkyns, second Malpas Vote: for 16; against 0; abstain 0; absent 1

PCOM Membership and Liaison Work

Austin stated that he would attend PPSP, since Lewis (PCOM Chair after 1 October 1992) would be attending all thematic panel meetings, DMP and IHP. Lewis would not, however, be official PCOM liaison to those meetings, so liaisons would still be required.

Becker could attend TEDCOM, but only part of DMP. He did not wish to be the only liaison to DMP. Malpas stated that he would not be able to attend the December 1992 PCOM meting. He noted that his alternate, Arculus, would be in Victoria and could liaise with DMP. Arculus was assigned that duty.

Von Rad would attend SGPP. Berger might also attend.

Watkins thought that SSP would request a meeting in October 1992. PCOM felt that Dick would be a suitable liaison, but he stated that he could not attend the December 1992 PCOM meeting. Jenkyns pointed out that SSP's Chair would be at the December 1992 PCOM meeting. Austin volunteered to liaise with SSP. Blum felt that SSP would hold its discussions, prior to the December 1992 PCOM meeting, by mail and did not plan a meeting. Austin said that he would participate in the mail review. Dick would be PCOM's liaison to SSP in future.

Jenkyns would attend OHP, Lancelot IHP, Larsen TECP and Mutter LITHP. Austin asked Sigurdsson to ascertain whether Fox would be able to attend SMP.

Watkins and Duncan would rotate off PCOM after its December 1992 meeting. In addition, Watkins would be unable to attend that meeting. Lancelot said that he, too, would probably be unable to attend the December 1992 PCOM meeting. His alternate was C. Mevel, but she would also be unable to attend, so there would be another alternate. Austin urged that PCOM members who would be unable to attend the December 1992 PCOM meeting give their alternates some instruction. Scheduling discussions at that meeting would be of great importance.

Austin noted that Sharaskin would be inactive as of 1 October 1992. Austin thanked Sharaskin for being a PCOM member and on behalf of PCOM expressed the hope that the hiatus in Russian ODP membership would be short.

CO-CHIEF SCIENTIST NOMINATIONS

Austin explained that Co-Chiefs had been nominated and had accepted their nominations through Leg 152. No other actions were needed. Pyle requested that copies of Co-Chief invitation letters be sent to JOI, Inc.

PCOM Consensus

PCOM endorses all personnel actions taken at the August 1992 PCOM meeting.

970. New Business

CONTENT AND FORMAT OF THE FY94 *ATLANTIC/EASTERN PACIFIC PROSPECTUS*

Austin explained that the JOIDES Office would put together a prospectus of highly-ranked proposals for dissemination to thematic panels (and last year to SSP). The 10-12 proposals in the prospectus would be re-ranked by thematic panels, along with any new proposals they chose to include, in order to assist PCOM to choose 5-6 legs to be scheduled for drilling during FY94. This year, a new policy had been established. SSP had met before PCOM to assess drillability of highly-ranked proposals to aid PCOM in selecting proposals for inclusion in the FY94 prospectus.

Watkins reported on SSP's data assessment (Appendix 9). Proposals had been divided into a number of categories based on readiness of site survey data. Most advanced were those for which required data existed now (column 1A) and those for which data would be in the Site Survey Data Base by 1 November 1992 (column 1B). Surveys for two other proposals would be complete before the December 1992 PCOM meeting (columns 2A). Those were the only groups of proposals that could be drilled in FY94. A number of other proposals would have site surveys complete by the end of 1993 (column 2B).

Mutter noted that VICAP-MAP appeared in two columns. Watkins explained that that proposal was made up from a combination of two proposals. The MAP part was ready for drilling, but VICAP was not. Larsen questioned the belief that there were insufficient data for NARM

volcanic-II drilling. Blum responded that NARM volcanic was complex. Misunderstandings existed about what should constitute a second leg. The NARM-DPG second leg option was ready, but some other options were not. Larsen asserted that a NARM volcanic-II was ready. Blum agreed. Austin cautioned that the FY93 *North Atlantic Prospectus* had been a thick document. In addition to the proposals listed (Appendix 9), there were ~15 new proposals for panel review. He introduced Blum.

Blum explained that SSP had reviewed ~25 of the highest-ranked proposals from the spring 1992 thematic panel global ranking list (Agenda Book, blue page 33). Some proposals had dropped out because thematic panels had considered them undrillable because of lack of data, or because they were not on the general ship track. SSP had evaluated the rest. Austin interjected that the current four-year plan, generated at the April 1992 PCOM meeting, specified that *JOIDES Resolution* would remain in the Atlantic through at least April 1994. During the remainder of 1994, the area of operations could include the Mediterranean and eastern Pacific. Blum continued, noting that PCOM had not had SSP input in August 1991, when deciding on the contents of the FY93 prospectus. As a result, some of the proposals included in the FY93 prospectus were not then, and were still not, ready for drilling.

Mutter noted that the spring 1992 global rankings were produced before Leg 148 became Hole 504B. Taylor asked the status of HD II, originally second in LITHP's global ranking beneath Hole 504B. Dick replied that there would be no HD II proposal prior to HD I drilling. Austin said that the only option would be to put the original HD proposal back in the FY94 prospectus. Blum responded that LITHP would not support HD II before HD I had been drilled. Austin stated that, therefore, HD II could not be included because PCOM, at its December 1992 meeting, would not be in a position to decide on it.

Blum reported that SSP had recommended considering proposals in columns 1A, 1B and 2A (Appendix 9) for inclusion in the FY94 prospectus. Relative to thematic panel rankings, 504B and HD dropped out of LITHP's ranking, because they were already scheduled. MARK and TAG, therefore, became LITHP's top two. OHP had only one proposal ready (Ceara Rise). Both SGPP and TECP had four each. Blum recommended that SSP's recommendation be followed and that no more proposals be included in the FY94 prospectus.

Austin noted that PCOM would be required to schedule legs up to the end of FY94. PCOM had decided against an engineering leg and, therefore, at least five science legs would be scheduled (legs 153-157), perhaps six if the schedule was extended into FY95. In response to a question form Berger, Austin said that SGPP was trying to generate gas hydrate proposals. It had advertised for such proposals in the *JOIDES Journal*. Blum added that two gas hydrate proposals had been received. Austin commented that SGPP had been proactive in this regard.

Pyle asked what could be done if a land test of DCS in FY93 became possible. Austin replied that, if PCOM knew that by December 1992, it could schedule an engineering leg for FY94. PCOM could schedule an engineering leg anyway and replace it with a science leg if funds for a FY93 DCS land test did not materialize.

Becker expressed concern about how to treat second legs of multi-leg programs. Austin responded that a new Sedimented Ridges (SR) proposal was expected. SR-DPG had specified a working DCS for leg II. In the absence of DCS, a new proposal was required. Blum stated that SR-DPG did not specifically mention a second leg. Becker asked whether a policy was needed. Austin replied that PCOM had passed a motion, at this meeting, charging thematic

panels to provide updates on multi-leg programs. That should be enough. After that, new DPGs might be needed.

Taylor felt that the two proposals for gas hydrates might be highly ranked by SGPP in the fall. Austin responded that that was not excluded. Blum, however, added that both proposals would probably be immature. There were many possible sites. Two gas hydrate proposals had been submitted, but many more were expected. He felt that SGPP would not push gas hydrates too early. Austin suggested that SSP might try to examine relevant data through the mail if that happened. Blum doubted that that would be possible. SSP would look at data packages of those proposals for which SSP had already requested data from proponents. SSP had wanted PCOM to make that clear.

In response to a question from Taylor, Blum said that the Costa Rica data package was classified as complete, but that it should not be included in the FY94 prospectus because proponents had been asked to consider fluids and that required another site-survey cruise. SSP's positive drillability assessment was based on the original proposal, but that proposal was thematically incomplete. A further anomaly was that some data (e.g., Ceara Rise) would not be in the Site Survey Data Bank by December 1992, but SSP was confident that it would be forthcoming. Therefore, Ceara Rise should be included in the FY94 prospectus. Taylor asked how PCOM could schedule such incomplete programs. Blum replied that, at this stage, data packages were generally incomplete. SSP wanted PCOM to issue an ultimatum to proponents to ensure that data were submitted to the Data Bank. Austin added that "it was a moving target." The system was not perfect. Some proponents had said that being in the prospectus helped get site-survey cruises funded. Panels, on the other hand, wanted proposals in the prospectus restricted to a manageable number. The JOIDES Office aimed at a prospectus cut-off comprising the top five in global rankings. Costa Rica was ranked seventh, and that only by a single panel. Mutter felt that PCOM would have to schedule lower-ranked proposals if it wanted to focus ODP.

In response to a question from von Rad, Blum said that VICAP and MAP elements of VICAP-MAP had different levels of site-survey readiness. They were still not highly ranked. Austin stated that PCOM would eventually need to pass a motion covering proposals to be included in the FY94 prospectus. Blum pointed out that Costa Rica and VICAP-MAP constituted exceptions to be clarified. Should Costa Rica be included because it was ready, though it was ranked low? The consensus of PCOM was that Costa Rica be omitted from the FY94 prospectus. Should VICAP-MAP be included because it was only partly ready and also ranked low? Austin suggested that PCOM could continue to encourage VICAP-MAP proponents to merge. They should not be penalized. Blum stressed that merging had penalized MAP. MAP was ready for drilling, but merging with VICAP rendered the joint proposal not ready. Von Rad felt that the revised, merged VICAP-MAP proposal was a great improvement. A *R/V Meteor* cruise was scheduled for 1993. Malpas suggested including VICAP-MAP in the FY94 prospectus with the proviso that the results of the *R/V Meteor* cruise were a prerequisite. Austin agreed. Taylor noted that the VICAP-MAP combined proposal had not existed during the spring 1992 global rankings. Blum responded that it would, however, be the revised version that would go into the prospectus.

Mutter asked whether second NARM legs could occur in FY94, or whether a gap of a year was required. Larsen replied that NARM-DPG had specified a gap after two legs of each of NARM volcanic and NARM non-volcanic. Blum added that the second NARM volcanic leg was clear (i.e., completion of the transect begun on NARM volcanic-I, Leg 152). NARM non-volcanic-II was less clear. Austin responded that the intent of NARM-DPG had been that NARM non-

volcanic-II would be NB. In response to a question form Mutter, Austin confirmed that NB could be scheduled without results of NARM non-volcanic-I.

Taylor asked whether the FY94 prospectus would include the NARM-DPG report. Austin replied that it might not. The panels had it already. The JOIDES Office or Panel Chairs could send copies of the NARM-DPG report to new panel members who did not already have copies. The prospectus would be out within a week following the present meeting. Austin wanted to give panels as much time as possible to digest the prospectus.

Blum stated that SSP had wanted PCOM to be aware that the lead time from 1 August (proposal submission deadline) to the SSP meeting had been too short. SSP wanted to make sure that there was more time next year. SSP recommended at least two weeks between the proposal submission deadline and PCOM meeting. Austin suggested simply moving the proposal submission deadline to 1 July. Blum countered that that would be too far in advance of the fall panel meetings. Dick suggested 15 July. Austin emphasized that the August 1994 PCOM meeting had already been scheduled. In addition, moving PCOM later would cause problems with teaching schedules. He suggested a 1 July proposal submission deadline. Proponents might be inconvenienced, but PCOM must respond to feedback from panels. The new deadline would be publicized in *JOIDES Journal.*

Blum reported that SSP also wanted PCOM to pressure proponents to get prospectus data into the Site Survey Data Bank by 1 November 1992. Austin, however, raised the objection that if a survey was run in September, the data would not be ready by 1 November (e.g., Ceara Rise). It would be better if submission of only a cruise report and track charts was required by 1 November 1992 in such cases, while data were in-house and being processed. Blum stated that SSP wanted to be able to confirm that data existed. Austin, noting that PCOM had included 11 programs in the prospectus, said that it was incumbent on the Site Survey Data Bank to ask proponents for updates by 1 November 1992. Taylor stressed that SSP had asked PCOM to provide "muscle." Blum acknowledged that, for some programs, complete data sets would be required on 1 November. For others (e.g., Ceara Rise), less data would be required by that date. Austin proposed that programs such as Ceara Rise submit available data, together with a schedule for completion of processing of new data, so that SSP would know that data would be ready 4-6 months prior to the leg for Co-Chiefs and PPSP.

Von Rad felt that the objective of NARM non-volcanic-II should be left open in PCOM's motion and not specified as NB. Priority might be given to a deep site at IAP. Austin noted that the spirit of NARM-DPG had been that NARM non-volcanic-II should be NB. He agreed, however, to leaving that unspecified in the motion. Thematic Panels would provide feedback. Blum pointed out that NARM volcanic-II objectives should also be left unspecified (it had originally been listed in the motion as "complete first transect"). Austin agreed. PCOM passed the following motion and generated the following consensus items.

<u>PCOM Motion</u>

After discussion of proposals highly-ranked and considered drillable in FY94 by the four thematic panels and on the general ship track defined by PCOM at its April 1992 meeting, PCOM has decided that the following programs, for which SSP considers that the required site survey data exist or that surveys could be completed by November 1992, should be included in the FY94 Atlantic Prospectus (and the following PCOM watchdogs are assigned):

323-Rev2	**Alboran Basin evolution**	**(Larsen)**
346-Rev3	**Eastern equatorial Atlantic transform**	**(Fox)**
361-Rev2	**TAG hydrothermal system**	**(Mutter)**
369-Rev2	**MARK**	**(Taylor)**
380-Rev3	**VICAP/MAP (only MAP ready for FY94)**	**(Arculus)**
388/-Add	**Ceara Rise**	**(Berger)**
391-Rev	**Mediterranean sapropels**	**(Jenkyns)**
405-Rev	**Amazon Fan**	**(Austin)**
414-Rev	**North Barbados Ridge**	**(Taira)**
NARM-DPG	**Non-volcanic margins-II**	**(von Rad)**
NARM-DPG	**Volcanic margins-II**	**(Duncan)**

Motion von Rad, second Mutter Vote: for 16; against 0; abstain 0; absent 1

PCOM Consensus

In response to a request from SSP, PCOM establishes a 1 November 1992 deadline for submission to the ODP Site Survey Data Bank of available data and schedules for completion of survey work for proposals to be considered for drilling in FY94. Decisions on FY94 scheduling will be based on proponents' compliance with this deadline.

PCOM Consensus

Because SSP was concerned that the lead-time from data submission deadline to PCOM meeting had been too short to ensure full compilation in the Site Survey Data Bank, PCOM sets a deadline of 1 July for submission of proposals to the JOIDES Office and of site survey data to the ODP Site Survey Data Bank.

PCOM WATCHDOGS

Austin pointed out that PCOM watchdogs would be required to keep track of proposals and, primarily, give presentations on proposals at the PCOM Annual Meeting (the JOIDES Office to provide viewgraphs from the FY94 prospectus).

The following watchdog assignments were made:

Arculus	VICAP-MAP
Austin	Amazon Fan
Berger	Ceara Rise
Duncan	NARM volcanic-II
Fox	Equatorial Atlantic Transform
Jenkyns	Mediterranean Sapropels
Larsen	Alboran Sea
Mutter	TAG
Taira	Barbados

Taylor	MARK
von Rad	NARM non-volcanic-II

PANCHM CHAIR

Austin explained that PANCHM was a one-day meeting immediately preceding the PCOM Annual Meeting. It enabled Panel Chairs to provide united input to PCOM. Austin noted that PCOM must nominate a Chair for PANCHM for the December 1992 meeting in Bermuda.

Lancelot nominated J. McKenzie (SGPP). Malpas nominated K. Moran (SMP). Austin recalled that the 1991 PANCHM Chair had been a thematic Panel Chair. PCOM agreed and nominated Moran as PANCHM Chair, with McKenzie as alternate in the event that Moran might be unable to attend.

USE OF HOLE OSN-1 FOR WIRELINE RE-ENTRY TESTS

Austin explained that F. Spiess (SIO) planned to conduct tests of a wireline re-entry system at Hole OSN-1 (see letter from Spiess to EXCOM Chair, Agenda Book, white page 360). FDSN was aware of the plan and had endorsed it, but had wondered how Spiess had obtained permission to carry it out. Austin, however, had only found out about the proposed work because USSAC had decided to fund it. Austin had informed Spiess that he should request permission to use the site. The result was a letter (Agenda Book, white page 360) informing the EXCOM Chair about the proposed work, rather than asking permission to carry out that work. Austin noted that the proposed work was in line with how the JOIDES advisory structure wanted the hole to be used, so that allowing the plan to proceed was acceptable. He asked whether, however, PCOM should reiterate the protocol for use of re-entry holes.

Pyle recalled that an EXCOM motion, dating from the April 1987 EXCOM meeting in College Station, had stated that EXCOM requested parties using ODP holes to ask EXCOM and give a written report. ODP, however, really did not own the holes. Austin stated, however, that ODP would be blamed if Spiess damaged the hole. Becker stated that there had been several wireline re-entries in the past, but permission had been asked. Dick suggested asking USSAC, NSF and international funding agencies not to fund such work without checking with PCOM. Austin disagreed. Malpas felt that PCOM should ask EXCOM to discuss such requests with PCOM since they affected the scientific program. Pyle proposed that EXCOM be asked to modify its motion by substituting PCOM for EXCOM as contact for parties interested in using holes. Austin responded that he could ask EXCOM to do that at its January 1993 meeting.

Becker noted that the French had raised the issue of who decided which holes were allocated for post-ODP use, with regard to their submersible re-entry program. He asked who would coordinate use of such holes, adding that there were few re-entry holes. Austin replied that DMP had flagged that issue. It was up to PCOM. Mutter asked how Spiess could be expected to know that he was required to ask permission. Austin replied that it had been stated in the *JOIDES Journal.* USSAC should have been aware of the requirement. He added that he would take the issue to EXCOM and also at that point there should be some announcement in the *JOIDES Journal.* Becker felt that the French group, given the success at Middle Valley, would now wish to try their submersible re-entry system at Hole 504B and HD. Austin encouraged international partners to make PCOM aware of their plans. Nobody wanted to see a hole junked, especially Hole 504B.

FUNDING OPTIONS FOR ODP

Austin wished to provide PCOM with some time to discuss options for augmenting ODP's funding and how to proceed with implementation. NSF wanted to receive detailed arguments from the community, at which time it could provide funding.

Dick expressed the opinion that, without raising ODP's profile within the scientific community, ODP would have little success in obtaining new funds. Austin asked how that could be accomplished. Dick replied that no attempt had been made by anyone to push the story of Hole 735B to the press. A press conference should be held if Hole 504B reached gabbro. Something more than the ODP-TAMU press release was required. It was necessary to do a better job pushing ODP's successes to the press and to periodicals like *National Geographic*. Austin noted, however, that someone would have to take responsibility for doing it. Dick was welcome to push Hole 504B to *National Geographic* if he wished. Dick responded that Co-Chiefs should be told to push their legs and ODP-TAMU should be advised to set up a New York press conference once /year. Francis asked why New York should be selected, since ODP was an international program. Austin noted that there had been press conferences at port-calls, e.g., in Australia. Dick contrasted ODP's level of publicity with that accorded the discovery of the *Titanic*. Austin replied that the publicity surrounding the *Titanic* discovery had had negative aspects. Austin added that he would like to see Co-Chiefs take responsibility for publicity. He did not feel that it was ODP-TAMU's job. W. Sullivan (ex-*New York Times* science correspondent) had often been mentioned as a potential publicist or as a model for the type of publicist required, but he had retired and was, in any case, unique.

Mutter suggested inviting *National Geographic* to cover ODP. Pyle responded that that had been tried. Francis added that it had almost happened on Leg 134. Pyle explained that the *National Geographic* group had not wanted to be forced to remain aboard *JOIDES Resolution* for an entire two-month leg. Austin suggested that Leg 150 (NJ/MAT) would be a possible option, because of proximity to shore. Mutter stated that Leg 151 (NAAG I) would also work. Larsen agreed. Pyle felt that the responsibility lay with ODP-TAMU. Francis acknowledged that criticism had been leveled at ODP-TAMU over its press releases. Pyle stated that he had been told by a national reporter that those releases were poor. Dick added that a press release he had written had been edited down by ODP-TAMU. Austin felt that it would be useful to try again with *National Geographic* for Leg 150 or Leg 151.

Pyle pointed out that every PEC made recommendations about publicizing ODP. It would cost money and that "times were tough" now. Austin countered that perhaps "tough times" were when the effort should be made. He did not think that the cost would be great. He asked whether there would be any resupply from shore during Leg 150. Francis said that that would be very easy to arrange. Mutter felt that *National Geographic* might be sensitive about being used to lobby. Pyle did not think that would be a problem. Mutter, however, wondered whether that might be the reason that *National Geographic* had not approached ODP. Austin stated that *National Geographic* was starting to fund stunts and that his regard for the magazine had declined. Storms felt that NAAG I would be more photogenic than NJ/MAT. Francis added, however, that NAAG I would cost more. Mutter suggested using the ice support vessel to transport reporters.

Pyle characterized the discussion as focusing on tactics. He asked about strategy. Austin replied that every review panel had recommended enhanced publicity. The strategy was to get extra money. Berger asked whether the intended audience was to be the public or scientists. Austin responded that most suggestions aimed at the public. Pyle, however, noted that all

options had been recommended in the past. Berger suggested that ODP might receive more credit from the public if it became more involved with education. Austin pointed out that USSAC had initiated a distinguished lecturer series, targeting smaller universities and colleges. That had been very successful. Berger felt that high schools should receive a videotape on ODP. Austin stated that a videotape existed. Pyle added that USSAC had funded an undergraduate course supplement on Cenozoic glaciation, but that NSF had stated that JOI, Inc. should not be in that business. Dauphin responded that NSF had merely considered that JOI, Inc. should not have to publish such items. That work should be done by other companies. Pyle commented that he had thought that JOI, Inc. had been told not to develop any more such publications. Dauphin said that that was not really the case.

Pyle stated that much relied on individual countries publicizing ODP in their own way. Austin gave the example of renewal, for which countries had organized individual conferences. Dick reiterated that he favored specifically encouraging Co-Chiefs to publicize their legs and also supported the idea of post-cruise press conferences. Austin cautioned that press conferences could work both ways, in that scientists did not always come off well on TV. Baldauf reported that ODP-TAMU had had two high school teachers put together projects for high schools. The response had been overwhelming. Austin noted that ODP-TAMU had also contacted museums with a view to setting up displays on ODP. Interested international partners should contact ODP-TAMU. Von Rad asked about the status of the ODP-TAMU posters promised to JOIDES institutions and members. Austin replied that they had been delayed. Mutter added that, in any case, they would only reach those already aware of ODP. Berger and Austin emphasized the numbers of people who could be reached by museum displays. Pyle said that JOI, Inc. had been attending conferences, like AGU, on science and technology. Hitting half a dozen of those would reach a large number of people. ODP would probably have to develop a museum exhibit. Austin noted that good video footage of re-entry, etc., was available. He applauded ODP-TAMU's museum initiative. Mutter felt that the work of developing exhibits should be subcontracted to professionals. Austin cautioned that the ODP Leg 105 video had been farmed out to a professional group. Results could be variable. Pyle stated that JOI, Inc. was trying to find good professionals. Francis explained that the ODP exhibit in St. Petersburg, Florida, was being designed by the museum, while ODP-TAMU provided information. Arculus informed PCOM that Leg 133 results had been televised on national TV in Australia (a 10 minute clip). He had that video. Austin expressed interest in obtaining a copy.

Larsen raised the issue of international contributions. US currently paid 58% of ODP's funds, but the total population of the international partner countries was greater than that of the US. Internationalization was a way to raise ODP's budget. Austin replied that international partners did not want their contributions to rise. Larsen commented that Japan seemed to have money, since it was both maintaining its membership and building a drillship of its own. Austin, however, stressed that it must be borne in mind that Japan's actual funding for its drillship had so far been small. Larsen asked what would happen if the Europeans and Japanese developed drill-ships and left ODP. Francis replied that international partners also wanted value for money and that *JOIDES Resolution* might still be the best value in 1998.

Austin noted that many activities were underway in ODP, but he did not know whether they would raise money. Mutter asked about the possibility of raising money from industry. Taylor suggested that PCOM review those ODP scientific objectives whose pursuit was being prevented by lack of funds. NSF in general, and the ocean science community in particular, would be going through a review of its long range plan during the next year. In all scientific initiatives, other than ODP, proposals were being submitted for ways to spend more money. ODP's drillship might represent a static cost, but ODP should still ask for more because it could not do all it wanted (e.g., DCS, additional platforms and data handling), without extra

funds. EXCOM had told PCOM not to worry about money and just to plan. At this meeting, however, PCOM had "hit the wall." Without Russian membership, some science could not be done. The point that ODP was losing the opportunity to carry out prime science had to be made. Austin felt that that had been begun at this meeting with philosophical endorsements of DCS and data handling, coupled with realistic estimates of what could be done. That had not been done before and constituted a clear signal to NSF. Taylor stressed that additional platforms were also needed. Austin felt that it would be necessary for an additional platform for NJ/MAT to be funded independently of ODP. Then PCOM could point to that as an example of how effective ODP could be with funds for additional platforms. Taylor, however, pointed out that PCOM was not pushing shallow-water drilling of NJ/MAT or A&G because there were no funds.

Pyle asked if Taylor was referring to the ACOS (Advisory Committee on Ocean Sciences) long range plan. Taylor replied that that was one of them. Austin explained that ACOS reviewed ocean sciences programs at NSF every three years. Taylor stressed that one part of that was ODP and ODP was not being pushed. Austin suggested that Taylor, an ACOS member, could push ODP. Taylor responded that the push would have to be broad-based. Pyle suggested inviting JOI, Inc. to testify at ACOS. Taylor said that documents would be needed to establish ODP's need, not just individual opinions. Austin responded that ODP's LRP provided an eloquent explanation of why ODP could not get some things done. Simply compare the LRP budget figures with the actual budget. Pyle suggested inviting himself, Austin or Lewis to give a briefing to ACOS. Dauphin pointed out that, if ACOS did not hear the arguments and make recommendations, NSF-ODP could not go for more money. Austin said that he would need to know more specifically what was required than a statement from a broad community. ACOS might not take kindly to being lobbied. Its view might be that ODP's financial base was stable and adequate. Taylor agreed that that was ACOS's view and stressed that it would have to be changed. In addition, ACOS dealt primarily with science, not budgets. It would be necessary to explain to ACOS which science was not being addressed owing to lack of funds. Austin responded that ODP had its LRP, but had been discouraged by NSF from putting a document in place of that. Dauphin commented that there might be a COSOD III in three to four years, but, until then, there was no document other than the LRP. Austin felt that the LRP was an eloquent example of frustration, since ODP's budget was below LRP levels. Malpas thought that it might be useful to be more specific than the LRP. Austin responded that he had done so at EXCOM at its June 1992 meeting. He had stressed DCS, additional platforms, pore-fluid sampling and data handling and asked how to deal with those issues, since ODP was already at the limits of its budget. He had received no response.

Malpas expressed the opinion that it was necessary to sell ODP to the general geosciences community. Ambos doubted that most of the non-ODP geosciences community would respond to lectures on the LRP. They might, however, respond to grass-roots communication. Malpas noted that community feedback was that ODP was not doing anything new, but the truth was that ODP could not do such things. Plans existed, but funds did not. ODP should not be defensive. Austin responded that, if PCOM wrote to ACOS saying that ODP's science was good and asked for money, it would be somewhat tainted by its own associations. Pyle asked who else would take such action. Austin replied that that was presumably why the US had the NAS, a group that said what was important in science and was viewed as independent. Austin agreed, however, to write a briefing for ACOS. Ambos reiterated that grass-roots, *ad hoc* communication might be more effective. Dick agreed, adding that WHOI had not cared much about ODP until he and S. Hart had sold it to the new director. Austin asked how many PCOM members briefed their EXCOM members. Mutter replied that he spoke to his before PCOM meetings. Dick stressed the need to reach non-JOI institutions, adding that ODP was "big science."

Pyle felt that a summary of the problem, by PCOM, was needed. Austin responded that he would, in September, summarize where ODP stood with respect to some major items. Malpas emphasized that, in order to reach scientists outside ODP, it was vital to relate ODP's needs to science and not just say, e.g., that ODP needed DCS. DCS was needed to achieve scientific objectives. Austin proposed farming out parts of the summary to different PCOM members. He would then put the sections together.

Francis, noting that the focus of the discussion had been on US funds, pointed out that international partners had been receiving excellent value from ODP as a result of the weakening US dollar. He felt that NSF had been timid in asking the international partners to pay more. Arculus, however, responded that such a request would kill ODP. The community in Australia felt that ODP was well funded. Only now might they be satisfied with ODP. They had got a lot out of ODP, but wanted more. Malpas added that Canada would back off if the increase in contributions was only to maintain the *status quo*. Canada had done well out of ODP, but it would be necessary to show that there would be a step forward to accompany any increase in contributions. A large jump in contributions now would not be workable. The process should have begun long ago with small increases. Malpas felt that a case for increased contributions could be made. Austin commented that NSF had been reluctant to change its scenario for contributions. Dauphin informed PCOM that an ODPC member had expressed concern that a second increase in international partner contributions in FY95 would be a problem. Malpas countered that ODPC was not being told that it would be getting new and exciting results in return for increases. He added that ODPC knew little about ODP's science. Austin responded that he had told EXCOM/ODPC about science, but had still been met with stony stares. Jenkyns stated that UK's budget was tight. BP was no longer contributing. Renewal had been on the basis of no increase in contributions. He added that he would have to defer to UK EXCOM and ODPC members. Austin commented that J. Briden (UK, EXCOM) had said that renewal negotiations would have to be restarted in the event of a 10% increase in international partner contributions. Larsen expressed the hope that, in three to five years, ESF would be able to take 1.5 memberships. He agreed that the discussion of funding had been too US-oriented. It was necessary to lobby international partners, too. Von Rad stated that, three years ago, he would have said that an increased contribution from Germany would be no problem. Now, however, the financial situation was bad (e.g., reunification pressures).

Ambos recalled that the US focus of the discussion was the result of Lancelot's comment on the lack of growth in the US contribution to ODP relative to contributions to other initiatives. A two to three year lead time would be required for any response. The crisis had only recently developed, however. She asked how to proceed. Austin felt that the need had been expressed since the LRP was published ~two years ago. Arculus stated that the Australian community would respond to a request for more money for DCS by pointing out that it was ODP's decision to drill high latitudes and pay instead for an ice support vessel, so ODP should live with it.

Francis noted that the other way to increase funds was to increase membership. He asked whether fractional memberships should be allowed (e.g., New Zealand). Austin explained that J. Baker (JOI, Inc.) spoke at each EXCOM meeting about new members, e.g., Korea/Taiwan, a South American consortium and perhaps South Africa. (NSF felt that any new member must have a significant science community.) The issue was discussed, but then nothing happened. Francis stressed the importance of finding the right people in each country to lobby. Austin added that people were also needed to take the lead. He felt that only lip service was being paid to the issue. Pyle responded that JOI, Inc. was working on a plan for a visit to the Far East to explore possibilities for new members. Arculus asked whether potential new members

regarded ODP as a closed shop, or whether they had expressed interest. Austin replied that Taiwan had made some enquiry. Malpas added that Korea had approached Canada about being part of a consortium, but Canada had backed off. New Zealand was interested, but not in full partnership. Personal contacts were necessary. Jenkyns asked whether fractional memberships would be allowed. Pyle replied that that option had been turned down because of problems associated with shipboard staffing and fractional votes. Francis, however, felt that it could be workable. Austin added that ODP was at the point where a few hundred thousand dollars would help. Francis felt that Korea wanted to expand. The contact there was Dr. Park.

Austin asked for volunteers to write one-page summaries for ODP themes. He would write an introduction and send the whole document to ACOS. The focus would be on the STRATCOM themes. The following tasks were allocated:

Sea level	Watkins
Neogene	Berger
Offset drilling	Dick
Passive margins	Larsen
Ridge Crests	Malpas/Mutter

Summaries should be received by Austin by 1 October 1992.

Mutter stated that the key was to emphasize where ODP was failing as a result of lack of funds. Austin replied that that was what he would try to do. He asked for input on whether the document should go to other groups besides ACOS. He also asked for confirmation that this approach was within the regulations governing ODP. Pyle thought that it was. Taylor stressed that the document should be written in terms that the broad scientific community could understand. Austin agreed, adding that it would be a hostile audience. Pyle also cautioned against using ODP terms, e.g., *leg*. Austin asked that contributors address long-term objectives (e.g., S-Reflector).

ADVISORY STRUCTURE REVIEW COMMITTEE

Austin stated that he would encourage the Advisory Structure Review Committee to meet separately and have isolated individuals watch PCOM in December 1992. He felt that PCOM might not shine brightest at the Annual Meeting. Pyle reported that the Review Committee planned to meet prior to the Annual Meeting and watch the whole meeting. Von Rad added that they would also be interested in PANCHM. Malpas did not feel that the Review Committee could get a feel for how PCOM operated if they sat in on only one or two meetings. He asked how much the Review Committee would be briefed in advance. Perhaps they should speak to individual PCOM members to get feedback. Otherwise, the Annual Meeting would appear confusing. Francis responded that the Review Committee did not comprise neophytes.

Von Rad reported that H. Dürbaum (Advisory Structure Review Committee Chair) had stated his intention of speaking to individuals and attending panel meetings. The Review Committee would not only attend the PCOM Annual Meeting. Fisk noted that he had found this meeting, his first, to be clear. Pyle commented that Dürbaum was receptive to suggestions as to how to proceed. Austin added that the Review Committee was not hostile. PCOM needed to help them; members should feel free to contact Dürbaum. Mutter did not feel that PCOM was particularly targeted by the Review Committee. It was looking at the entire advisory structure. Austin agreed, but noted that most ODP review documents mentioned PCOM. Part of the issue was institutional nomination, which did not necessarily guarantee that PCOM members were always the best. Austin, however, felt that the present PCOM was exceptionally active in research.

971. Future Meetings

The 1992 PCOM Annual Meeting would be held at the Bermuda Biological Station (BBS). A cost of ~$130/day would include accommodation and meals. Austin would host the meeting. The University of Miami, Rosenstiel School of Marine and Atmospheric Sciences, which was to have hosted the Annual Meeting, would host a subsequent meeting in Miami. PANCHM would meet on Tuesday, 1 December 1992, with PCOM meeting on 2-5 December 1992 (AGU would meet on 7-11 December 1992). A field trip would be arranged by a former student of Austin's. The field trip might take the form of several half-day trips. It would be necessary to be flexible in order to accommodate the meeting agenda. Austin said that he would verify that with Lewis. Pyle noted that a deposit of $100 each had been advanced to BBS by JOI, Inc. Invoices would be sent to all attendees, though the expense was reimbursable. Austin stated that spouses could be accommodated ($100 deposit for each spouse also required) and double rooms would be available. BBS expected 80 to 100 attendees, including spouses. There was a gradation in level of accommodation.

The 1993 Spring PCOM meeting would be hosted by J. Mutter at Columbia University, Lamont-Doherty Geological Observatory, on 26-28 April 1993. A field trip would probably be held, either to the Palisades Sill or Newark Basin drilling.

The 1993 Summer PCOM meeting would be hosted by R. Arculus in Brisbane, Australia on 10-12 August, 1993. A field trip to the southernmost islands of the Great Barrier Reef would be held on 9 August 1993.

972. Adjournment

Taira had had to leave the meeting earlier. Before leaving, he stated that, as the longest-serving PCOM member, he wished to express his gratitude to the PCOM Chair and the rest of the JOIDES Office staff. Difficult decisions and compromises had been necessary and Austin had stood alone on the floor and guided PCOM. In contrast to previous Chairs, Austin never sat down. Whether that was to keep control of the meeting, or to control jet lag, was uncertain. Taira felt that Austin was the best Chair PCOM had ever had. On PCOM's behalf, he expressed his sincere appreciation to Austin and the JOIDES Office.

Austin thanked Malpas, S. Deveau and Memorial University for hosting the meeting and arranging an outstanding field trip. The meeting was adjourned at 3:00 PM.

APPENDICES ATTACHED TO THE 11-13 AUGUST 1992 PCOM SUMMER MEETING

1. NSF report, supplemental information
2. JOI, Inc. report, supplemental information
3. Science Operator report, supplemental information
4. Wireline Logging report, supplemental information
5. Science Operator engineering report, supplemental information
6. Data Handling Steering Committee and ODIN proposal, supplemental information

7. Wireline Logging engineering report, supplemental information
8. Shipboard participants tally (legs 102-145)
9. SSP site survey data assessment (4-6 August 1992)

HANDOUTS DISTRIBUTED AT THE 11-13 AUGUST 1992 PCOM SUMMER MEETING

1. Letter from S. Swift (WHOI) to J. Austin (3 August 1992) re: Hole 504B VSP
2. Status of the Diamond Coring System (ODP-TAMU)
3. InterRIDGE, draft meeting report (11-13 March 1992, York, UK)
4. *RIDGE Events*, v. 3, No. 1, Spring/Summer 1992
5. *InterRIDGE News*, v. 1, No. 1, Spring/Summer 1992
6. Draft Leg 147 Scientific Prospectus, Hess Deep Rift Valley
7. SOEST position on the concept for an upgraded computer environment on the *JOIDES Resolution*
8. The Arctic Ocean Record: Key to Global Change (NADP Initial Science Plan), *Polarforschung*, v. 61, No. 1, p. 1-102
9. SSP site survey data assessment (4-6 August 1992)

APPENDIX 1

NSF REPORT

PLANNING COMMITTEE MEETING

CORNER BROOK, NEWFOUNDLAND

CANADA

AUGUST 1992

NSF BUDGET INCREASES - FY 1990-FY1993

	FY 90	FY 91	FY 92	FY 93 REQ
FOUNDATION TOTAL	8.3%	11.1%	9.8%	17.6%
BIOLOGICAL	4.3%	7.5%	7.5%	16.9%
COMPUTER/INFO	11.9%	10.1%	11.1%	29.1%
ENGINEERING	7.0%	7.5%	8.8%	20.9%
MATH./PHYSICAL	10.7%	7.1%	10.5%	16.5%
SOCIAL/BEHAV/ECON.			8.3%	25.5%
EDUCATION	19.3%	46.4%	37.6%	3.0%
ANTARCTIC PROG.	15.9%	15.2%	10.3%	-8.3%
GEOSCIENCES	5.2%	12.9%	10.1%	16.8%
ATMOSPH. SCI.	6.1%	10.1%	9.2%	19.4%
EARTH SCI.	11.1%	13.6%	7.6%	15.6%
ARCTIC SCI.	22.0%	20.0%	42.9%	21.9%
OCEAN SCI.	1.0%	11.8%	8.6%	15.4%
RESEARCH	2.8%	12.5%	10.7%	21.0%
FACILITIES	-3.0%	11.8%	8.3%	15.0%
ODP	0.1%	9.3%	4.1%	4.0%

OCEAN SCIENCE DIVISION BUDGETS
(in $ Millions)

	1989	1990	1991	1992	REQ 1993
DIVISION TOTAL	146.5	147.4	164.9	178.8	206.4
RESEARCH SEC.	71.4	72.9	82.1	90.8	109.2
FACILITIES	43.7	42.5	47.7	51.6	59.3
OCEAN DRILLING	31.5	31.9	35.0	36.4	37.8

FY 1992 NSF / ODP BUDGET

OPERATIONS AND MANAGEMENT (1)	$ 23,813,156
UNSOLICITED SCIENCE PROPOSALS	$ 6,856,844
U.S. SCIENCE SUPPORT PROGRAM -- USSAC	$ 4,700,000
OTHER FOUNDATION ACTIVITIES	$ 1,010,000
TOTAL FY 1992 BUDGET	$ 36,380,000

(1) Does Not Include $1.1M Carry-Forward from 1991 Fuel Supplement

FY 1992 NSF/ODP UNSOLICITED SCIENCE FUNDING

FIELD PROGRAMS			
1. CASCADIA MARGIN - VSP MOORE (SOEST)		140,000	
2. CEARA RISE - SEISMICS AND CORING CURRY (WHOI) & MOUNTAIN (LDGO)		614,900	
3. BARBADOS 3-D SEISMIC SURVEY SHIPLEY (TEXAS), MOORE(SOEST) MOORE (UCSC)		1,100,000	
SHIPTIME:		2,300,000	
		TOTAL	$4,154,000
DATA ANALYSIS - PREVIOUS CRUISES			
MOORE (UCSC)	67,400		
MOORE (SOEST)	118,800		
YAMAMOTO (MIAMI)	15,000		
CANDE (LDGO)	50,200		
BANGS (TEXAS)	89,900		
MOUNTAIN (LDGO)	316,988		
MILLER (RUTGERS)	48,600		
OBRIEN(SWEST)	40,000		
		TOTAL	$746,800
DOWNHOLE INSTRUMENTATION / DATA ANALYSIS			
CARSON (LEHIGH)	37,900		
BECKER (MIAMI)	91,820		
BOREHOLE SEISMOMETER	535,000		
		TOTAL	$664,700
ODP RELATED SCIENCE PROJECTS : MGG, DPP, ATM			
13 Separate Projects			
		TOTAL	$508,800
MISCELLANEOUS / INSTRUMENTATION			
9 Separate Projects			
		TOTAL	$782,500
		TOTAL FOR UNSOLICITED FUNDING	**$6,856,800**

NSF REVIEWS FOR RENEWAL

A. NRC/NAS REVIEW OF LRP - RECOMMENDED CONTINUATION

1. INVOLVE SCIENTISTS OUTSIDE ODP COMMUNITY

2. DEVELOP STRONGER LINKS WITH OTHER PROGRAMS

3. RE-ASSESS PROJECT GENERATION PROCESS ON A REGULAR BASIS

4. DEVELOP INTEGRATED GEOCHRONOLOGY

5. USE EXISTING TECHNOLOGY, BUT CONTINUE TO DEVELOP NEW TECHNOLOGY

6. USE APPROPRIATE MIXTURE OF TOOLS AND TECHNIQUES IN ADDITION TO THE RESOLUTION

B. NSF REVIEW OF 1993-1996 PLAN - RECOMMENDED CONTINUATION

1. EXPAND COLLABORATION WITH OTHER PROGRAMS

2. TECHNOLOGY GOALS MUST BE SET TO ASSURE SCIENCE OBJECTIVES CAN BE ACCOMPLISHED

3. ENCOURAGE MORE PARTICIPATION OF MEMBER COUNTRIES IN DEVELOPMENT OF TECHNOLOGY

4. DEVELOP A FORMAL STRATEGY AND POLICY FOR COMMUNICATING ODP RESULTS - PARTICULARLY TO THE GENERAL PUBLIC

5. INCREASE POST-CRUISE ANALYSES OF ODP SAMPLES

6. ANALYZE IMPLICATIONS OF THE AVAILABILITY OF ADDITIONAL PLATFORMS

7. MODIFICATIONS TO PUBLICATIONS MUST MAINTAIN PRESENT COMPREHENSIVE ARCHIVE REPRESENTED BY INITIAL REPORTS SERIES

8. SCRUTINIZE MANAGEMENT COSTS

C. NATIONAL SCIENCE BOARD CONSIDERATION IN AUGUST.

OTHER ITEMS

1. NSF OCEAN DRILLING PROGRAM AND EARTH SCIENCES DIVISION JOINTLY SUPPORTING U.S. PLANNING OFFICE FOR OCEAN SEISMIC NETWORK

2. NSF OCEAN DRILLING PROGRAM AND EARTH SCIENCES DIVISION JOINTLY CONSIDERING PROPOSAL TO EXTEND NEW JERSEY ODP TRANSECT DRILLING ONSHORE.

3, U.S. ACADEMIC RESEARCH SHIPS

   KNORR (WOODS HOLE) AND MELVILLE (SCRIPPS) BACK IN SERVICE

   NATHANIEL PALMER (POLAR PROGRAMS ICE-BREAKER) NOW IN SERVICE

   THOMAS WASHINGTON (SCRIPPS) HAS BEEN RETIRED
   (TRANSFERING TO CHILE SEPT/OCT 1992)

   CONSIDERATION IN PROGRESS TO TRANSFER ALVIN TO KNORR AND RETIRE ATLANTIS II

   1993 NSF BUDGET CONTAINS FUNDS FOR DESIGN OF ARCTIC RESEARCH VESSEL.

4. ELIZABETH AMBOS HAS JOINED THE NSF ODP STAFF AS A VISITING SCIENTIST

Table ES-3: Budgets for FY93 - 96 ($K)

Lower Profile (6 non-U.S. partners)

	FY92	FY93	FY94	FY95	FY96
TAMU					
Drilling & Engineering	$4,962	4,156	6,405	7,134	6,821
Technical & Logistics Support	4,170	4,394	4,792	5,004	5,226
Science Operations	1,311	1,227	1,534	1,602	1,515
Science Services	3,579	3,609	4,032	4,171	4,348
HQ/Administration	1,905	1,980	2,075	2,162	2,253
Ship Operations	19,878	21,650	21,393	23,670	23,185
TOTAL TAMU	35,805	37,016	40,231	43,743	43,348
LDGO	3,950	4,621	4,905	5,343	5,821
IOI/IOIDES	1,450	1,560	1,691	1,700	1,776
MRC's *	70	0	0	0	0
TOTAL	$41,275	43,197	46,827	50,786	50,945
SOE to be determined	125	0	0	0	0
GRAND TOTAL ODP BUDGET	**41,400**	**43,197**	**46,827**	**50,786**	**50,945**

* Micropaleontological Reference Centers

2.2

Table ES-4: FY93 Special Operating Expenses

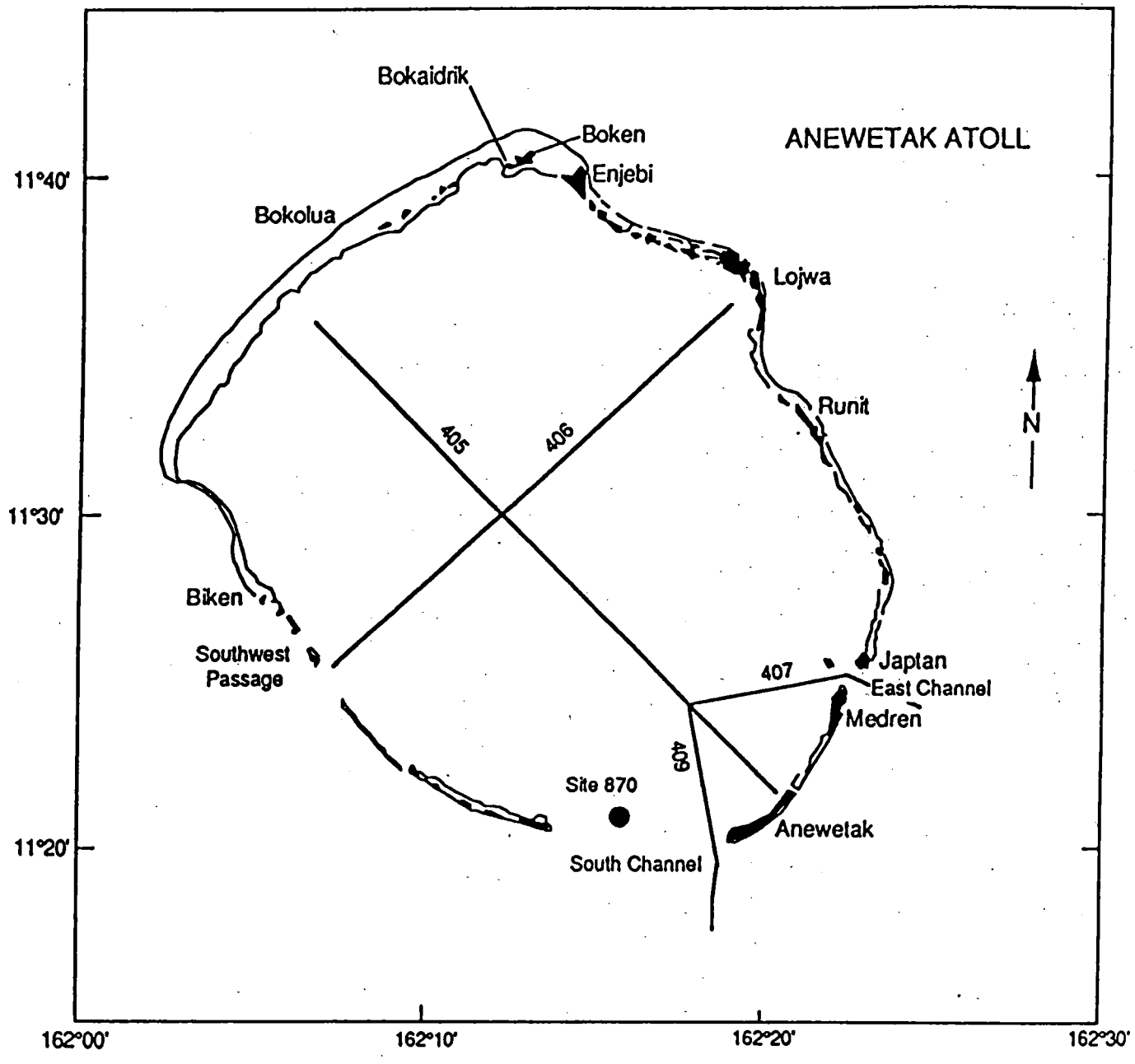
TAMU

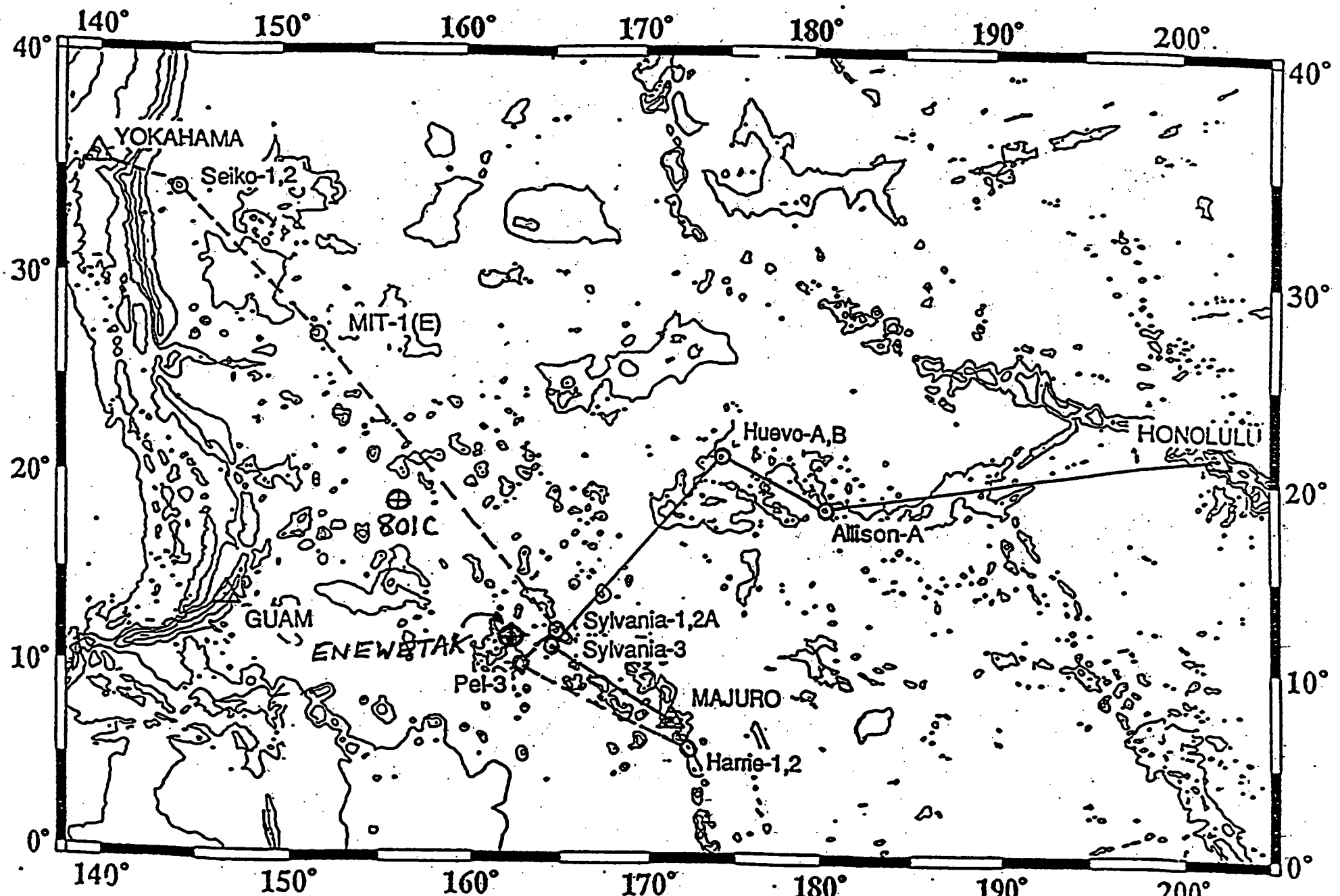
$350,000*	Computer Services. Funds ($300,000) are budgeted for computer and data base upgrades based on the recommendations from the Information Handling Panel (IHP), Shipboard Measurements Panel (SMP), and the expected results from upcoming computer evaluation meetings. In order to provide programming services in support of computer/data base upgrades, $50,000 has been requested for a computer consultant.
$38,000	East Coast Repository. Installation of core racks and purchase of additional equipment (e.g., tables, rock saw, forklift, shelving, work station to equip expanded refrigeration/work space, etc.) is required to support physical changes at the ECR and to accommodate additional cores scheduled for delivery.
$253,000*	Shipboard Science Equipment. Based on recommendations of the scientific community and several panels (i.e., SMP, IHP, etc.), funds are requested for purchase of ship/shore-based equipment. Purchases could include core-log integration, resistivity, core barrel magnetometer, color system, automated carbonate system, IC and multisensor track systems.
$1,100,000	Ice Boat. Funds are required for an ice boat to support high-latitude drilling scheduled for FY93.
$272,400	DCS Phase IIB. The Diamond Coring System is being developed to apply to ocean drilling the successes of the mining industry in drilling and coring igneous/metamorphic rocks. In FY93 funds are required for supplies, subcontracts, equipment and technical support. Salary support for an electronics technician ($52K) is also contained within the total.
$1,100,000*	Support is required for development of DCS Phase III during later fiscal years. These funds will be used for procurement of long lead items, subcontracts for additional design efforts, technical support, testing, etc. The initial $100K is for Phase III design. The remaining funds support hardware installation of either the surface tensioned equipment or the bottom mounted slip joint. Option selection is dependent on identification of the best operational solution. Phase III separates the DCS platform and drilling system from the shipboard hoisting system permitting longer cores to be cut and reduces drill rod trip time.
3,113,400	

LDGO

$185,000	Digital Resistivity Tool. The Camborne School of Mines Associates will, in cooperation with the U.K. Department of Energy, develop a digital version of the slimhole, high-temperature resistivity tool for use in ODP boreholes. LDGO/BRG will be charged for half of the development cost.
$116,000	Logging Winch. The logging winch on board the JOIDES Resolution is now approaching the end of its expected lifetime. The funds are for installation of a new Schlumberger winch unit.
$301,000	

* If the lower budget level (with six instead of seven international partners) is approved for FY93, these items will not be funded.

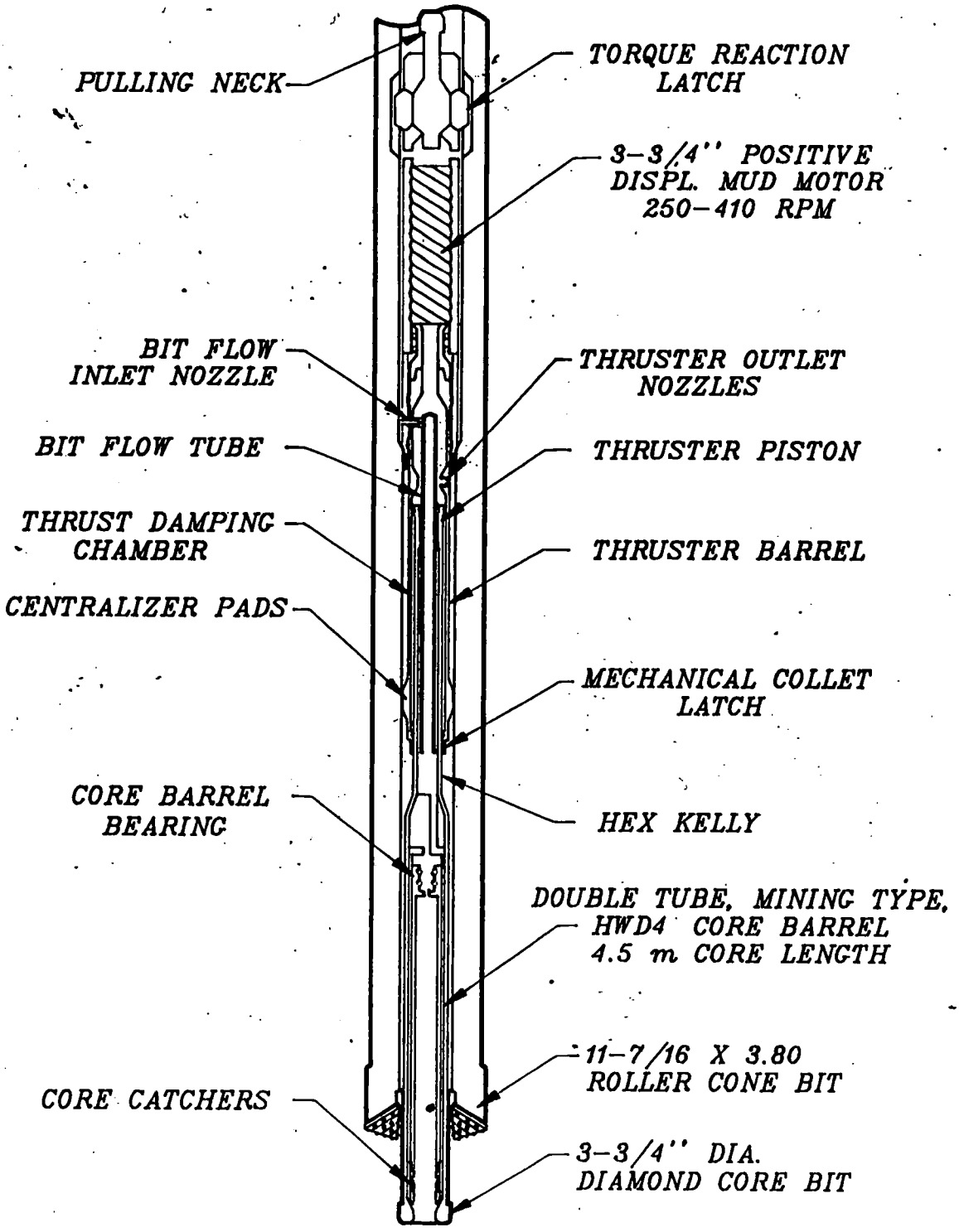

ANEWETAK ATOLL
Bokaidrik
Boken
Enjebi
Bokolua
Lojwa
Runit
N
405
406
407
409
Biken
Southwest Passage
Japtan
East Channel
Medren
Site 870
Anewetak
South Channel
11°40'
11°30'
11°20'
162°00'
162°10'
162°20'
162°30'



SHIP TRACK RECOMMENDED FOR LEG[illegible] 143 (SOLID LINE) AND 144 (DASHED LINE)

BY ATOLLS AND GUYOTS DETAILED PLANNING GROUP

MOTOR DRIVEN CORE BARREL
(MDCB)
OCEAN DRILLING PROGRAM



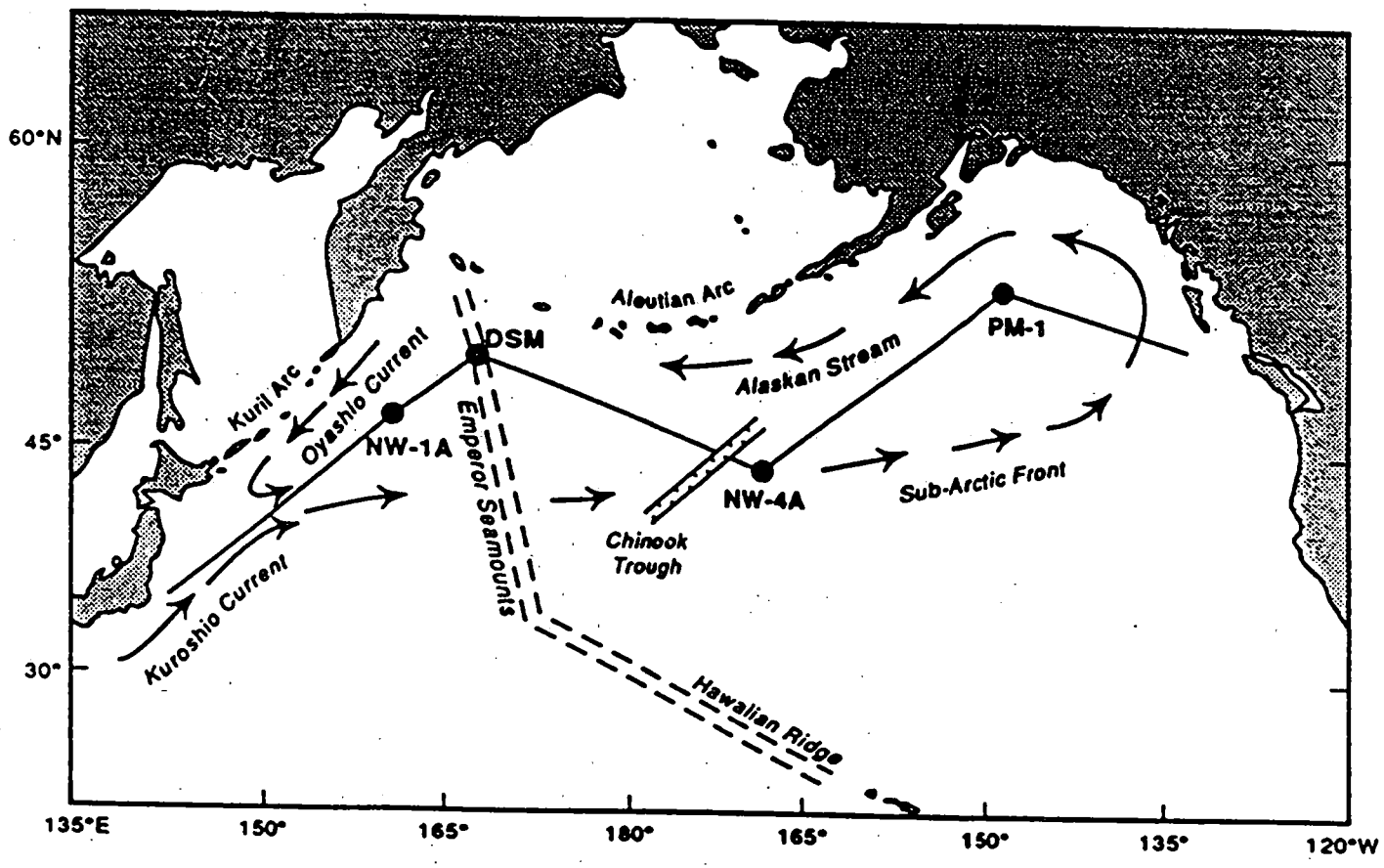
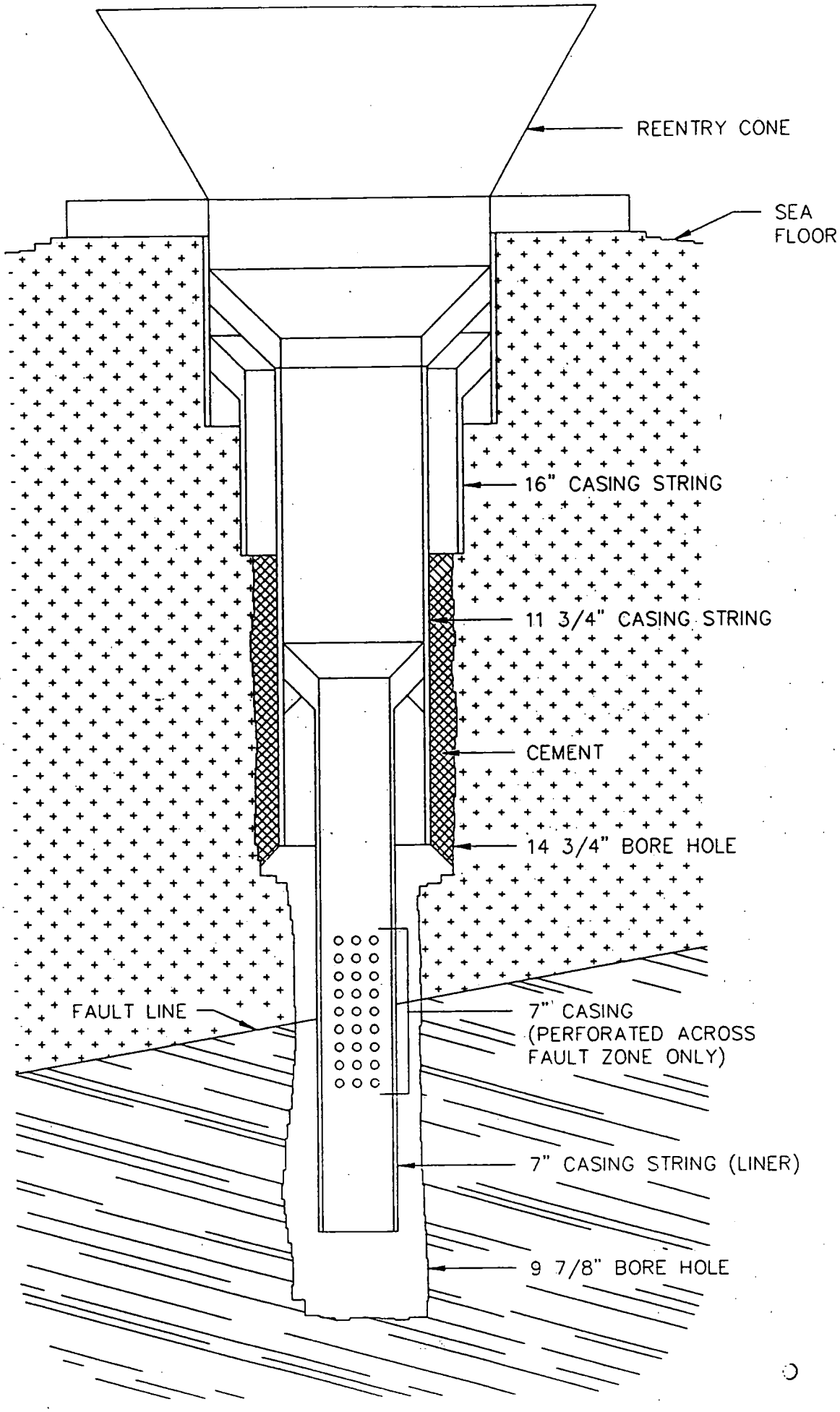
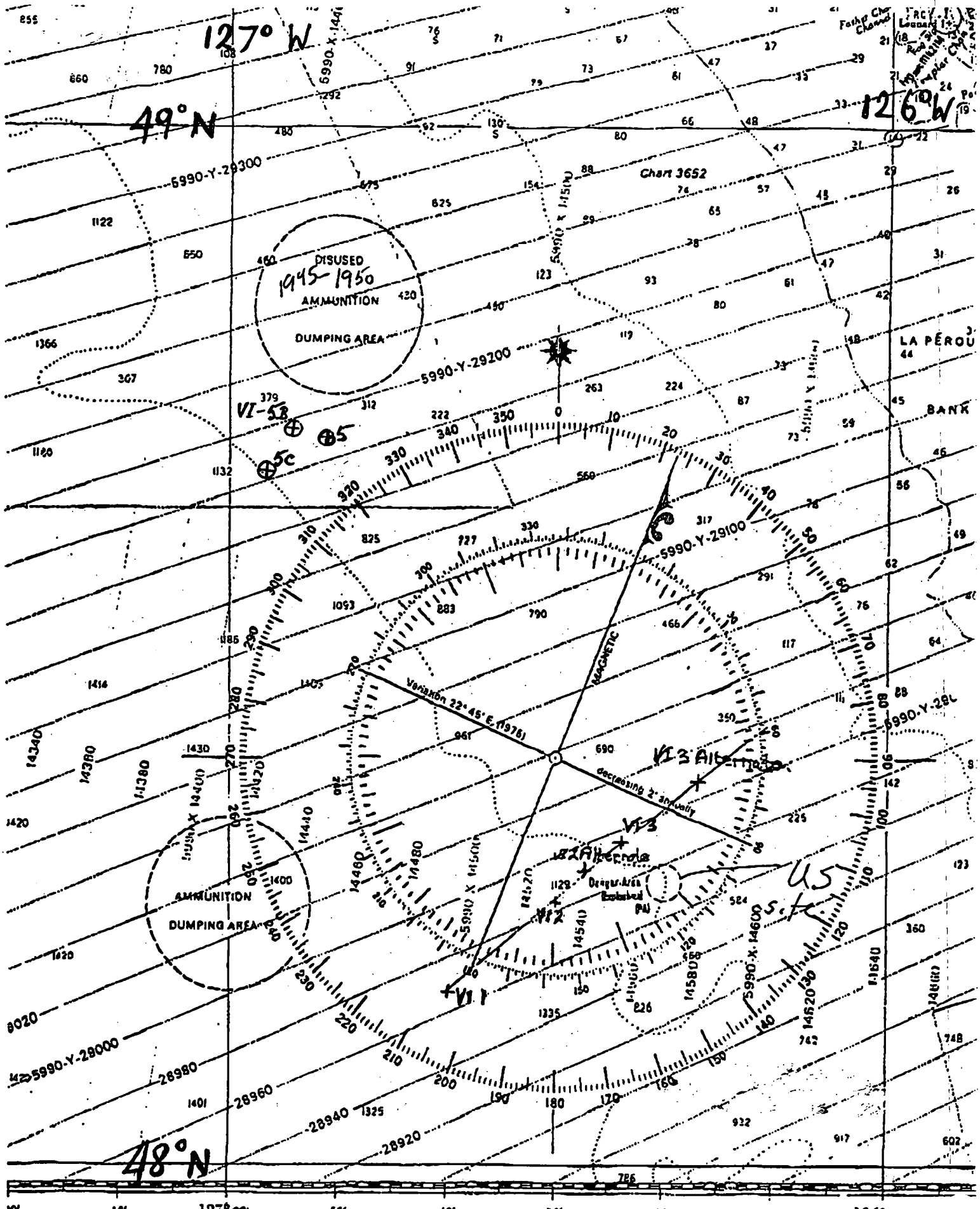


Figure 1. Proposed ship track (straight lines) and site locations (solid circles) for Leg 145. These sites include the northwest Pacific transect sites (NW-1A and NW-4A), the Detroit Seamount sites (DSM-1, -3, and -4), and the Patton-Murray Seamount site (PM-1).


REENTRY CONE
SEA FLOOR
16" CASING STRING
11 3/4" CASING STRING
CEMENT
14 3/4" BORE HOLE
FAULT LINE
7" CASING (PERFORATED ACROSS FAULT ZONE ONLY)
7" CASING STRING (LINER)
9 7/8" BORE HOLE

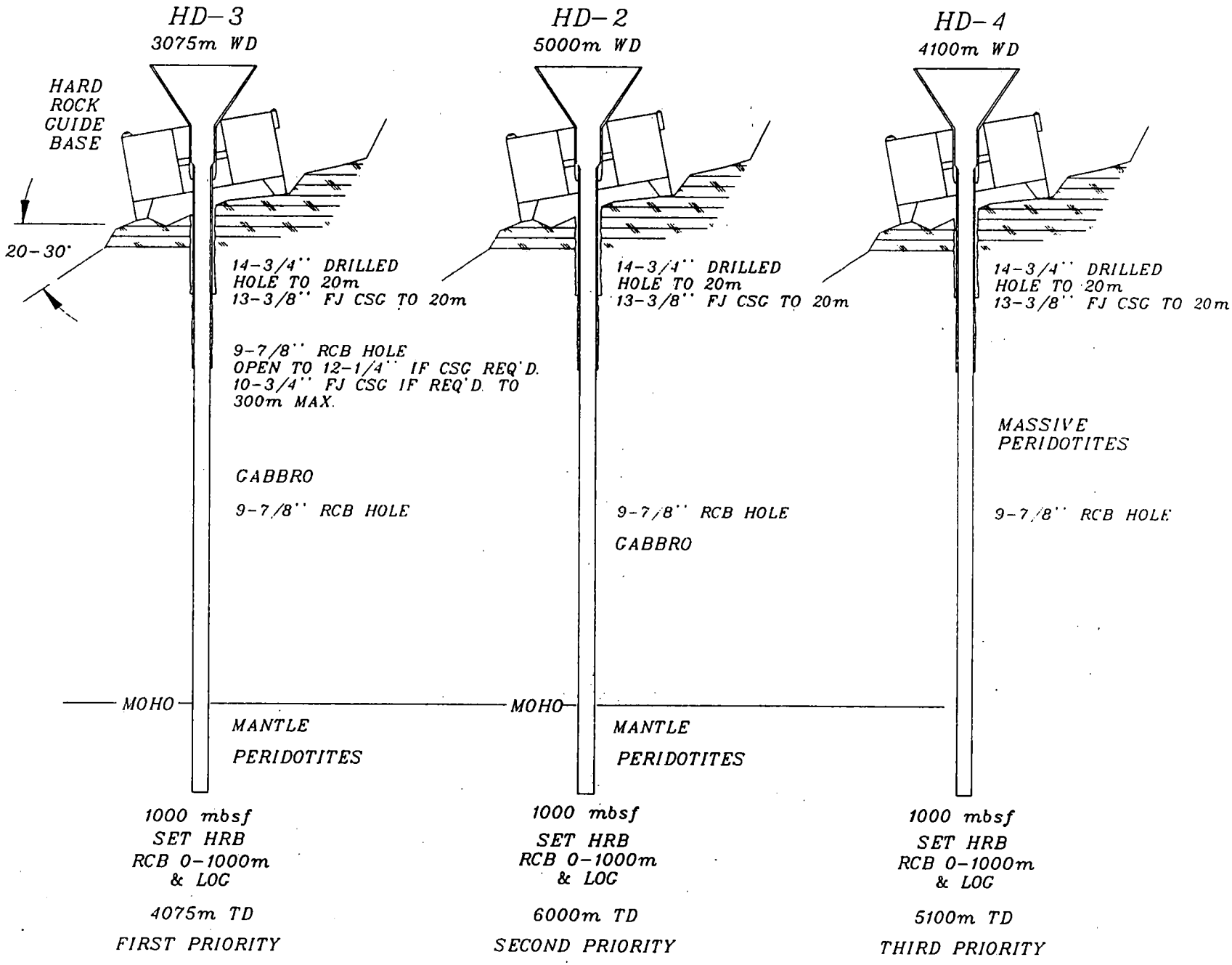


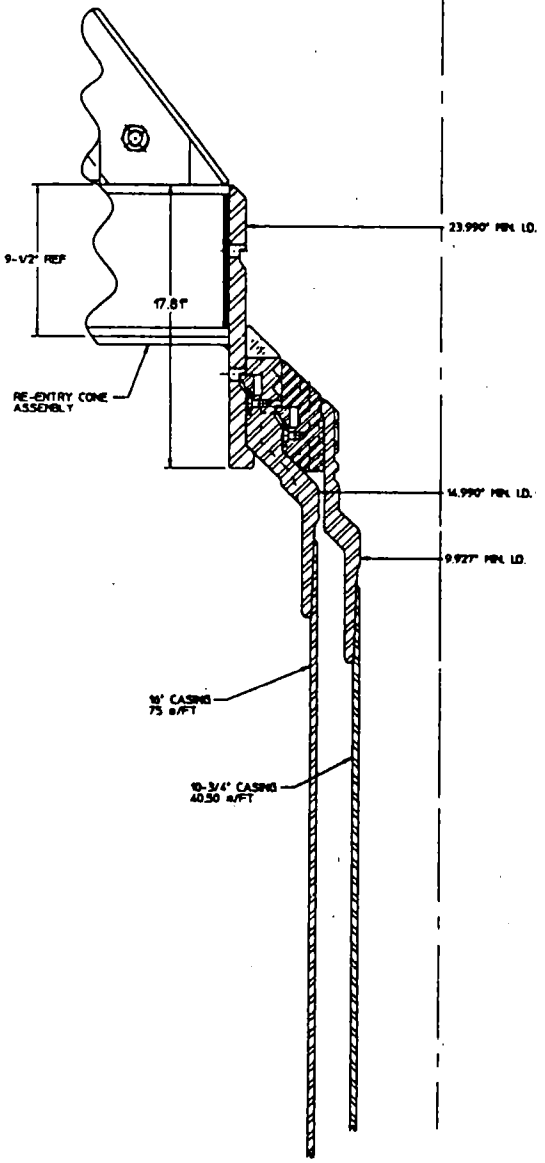
PUBLISHED BY THE CANADIAN HYDROGRAPHIC SERVICE
DEPARTMENT OF FISHERIES AND THE ENVIRONMENT, OTTAWA

FIG.

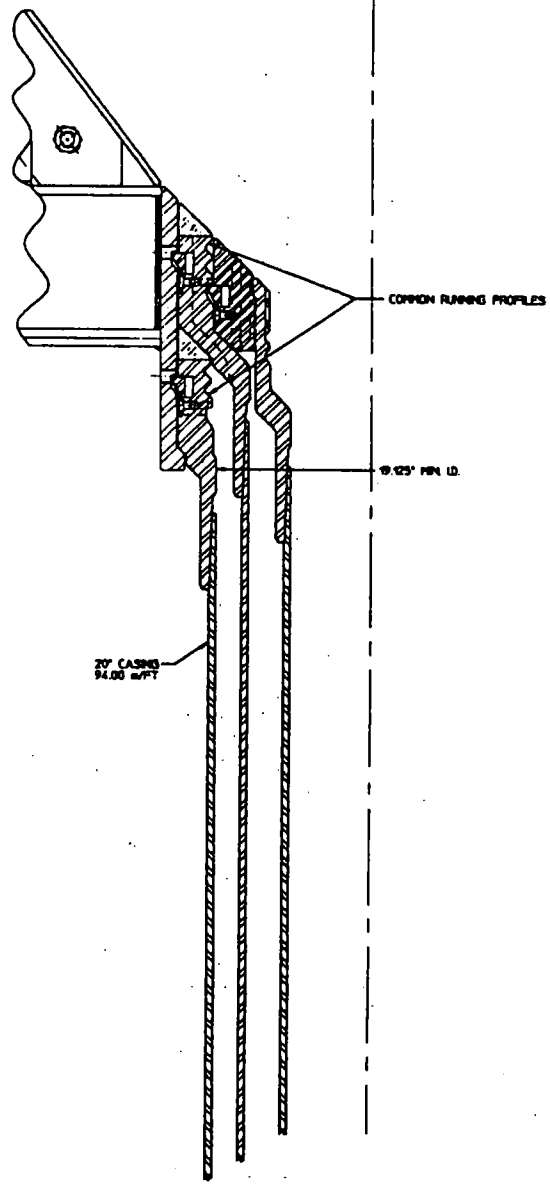
LEG 147
HESS DEEP

SAN DIEGO 22 NOV '92 – 22 JAN '93 PANAMA

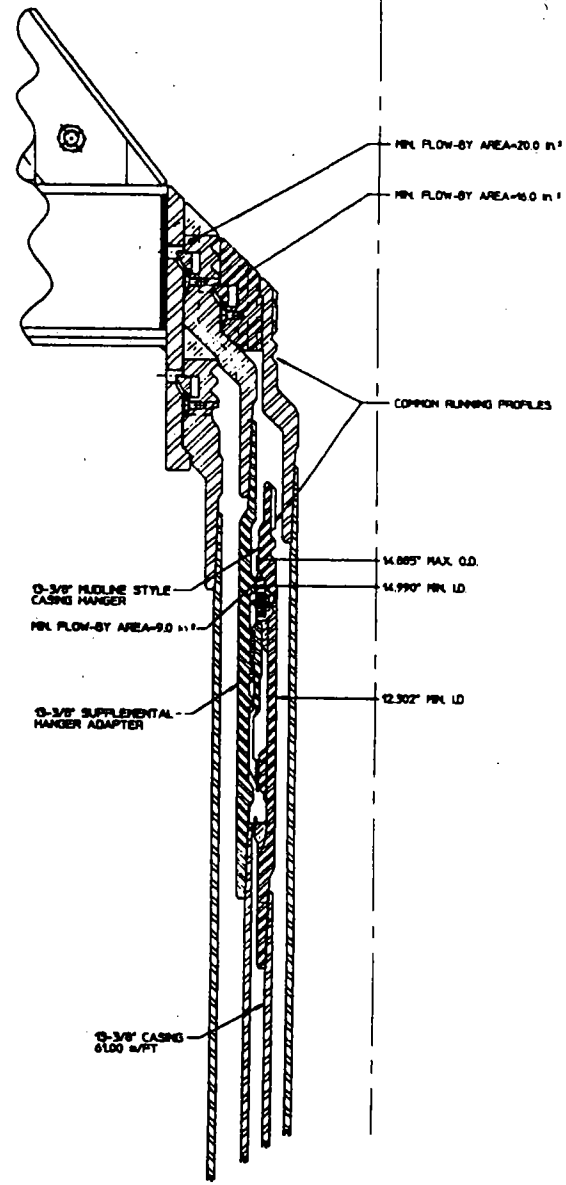




OPTION 1 : 16" X 10-3/4" CASING PROGRAM



OPTION 2 : 20" X 16" X 10-3/4" CASING PROGRAM



OPTION 3 : 20" X 16" X 13-3/8" X 10-3/4" CASING PROGRAM

NOTES:

CAD

OPTIONAL

WELLHEAD SYSTEMS
SCRAPED W/DRILLING COMPLETED
4 DRILLING PROGRAM

LEG 146 — **CASCADIA**

CO-CHIEF SCIENTISTS: BOBB CARSON (LEHIGH UNIVERSITY)
GRAHAM WESTBROOK (UK)

ODP STAFF SCIENTIST: BOB MUSGRAVE
ODP OPERATIONS SUPT: GLEN FOSS
ODP LAB OFFICER: BRAD JULSON

PRE-CRUISE MEETING MID-APRIL 1992, PROSPECTUS PUBLISHED JUNE 1992

LEG 147 — **HESS DEEP**

CO-CHIEF SCIENTISTS: KATHRYN GILLIS (WHOI)
CATHERINE MEVEL (FRANCE)

ODP STAFF SCIENTIST: JAMIE ALLAN
ODP OPERATIONS SUPT: GENE POLLARD
ODP LAB OFFICER: BILL MILLS

PRE-CRUISE MEETING JUNE 1992, PROSPECTUS DUE AUGUST 1992

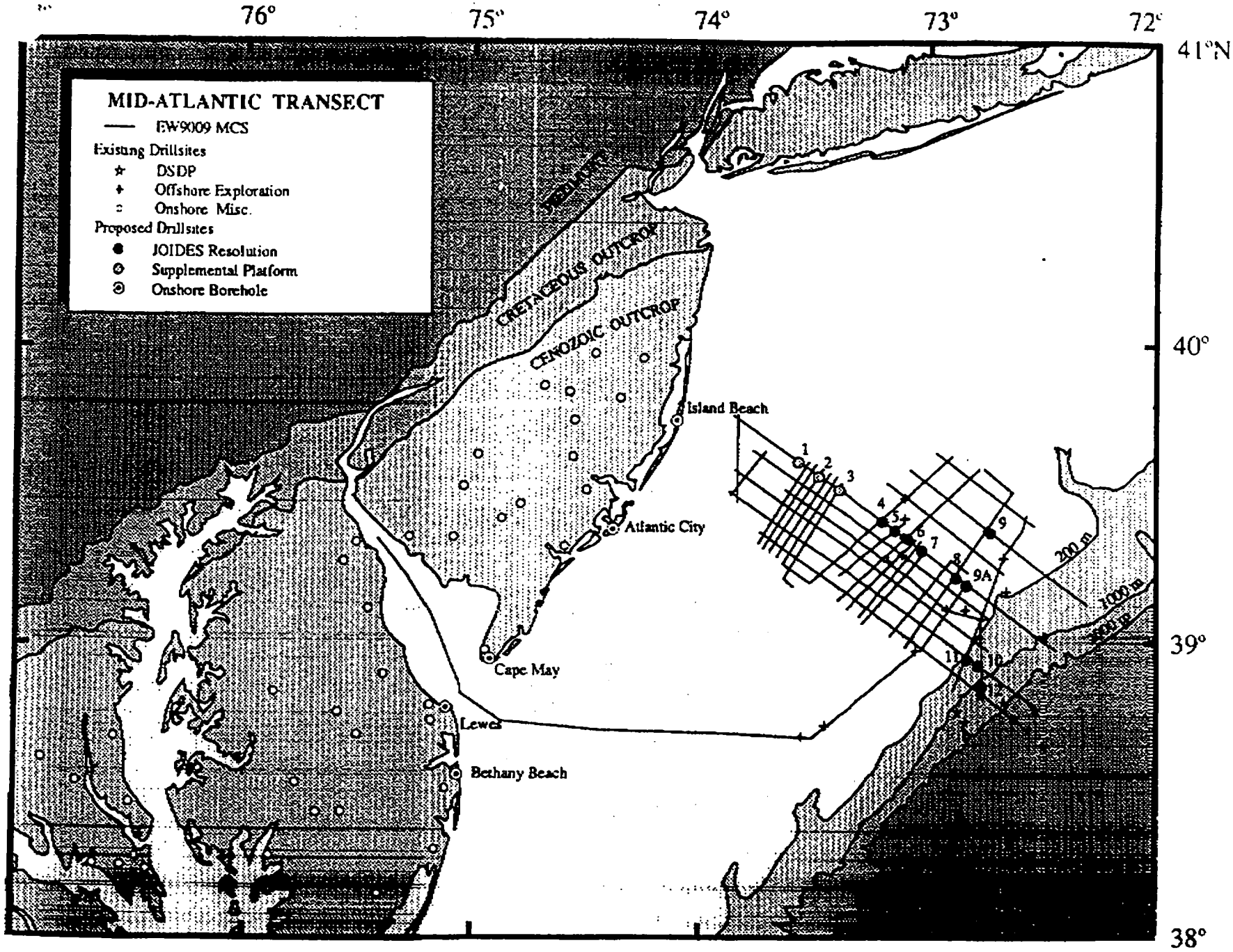
LEG 148 — **HOLE 504B**

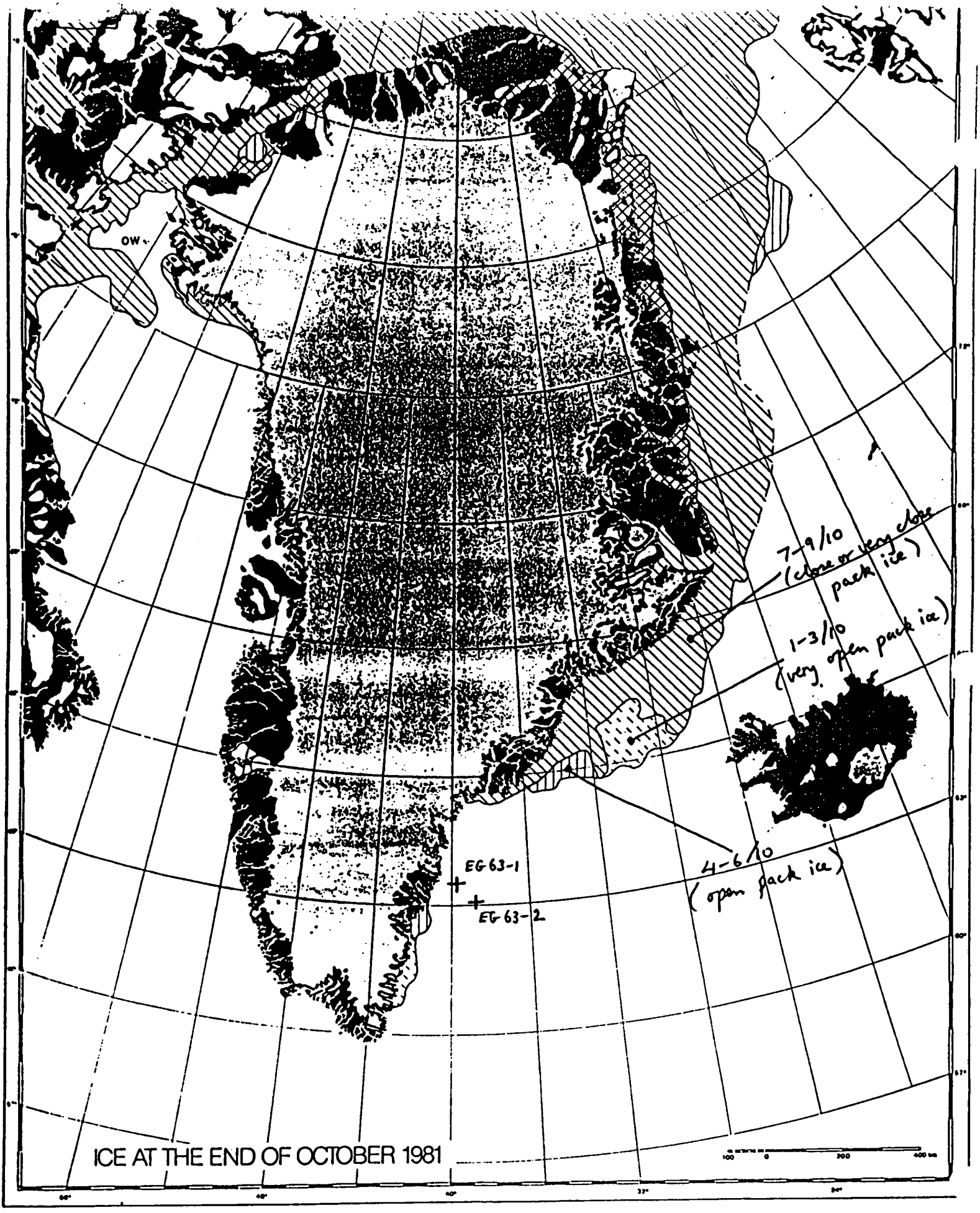
CO-CHIEF SCIENTISTS: JEFFREY ALT (UNIVERSITY OF MICHIGAN)
HAJIMU KINOSHITA (JAPAN)

ODP STAFF SCIENTIST: LAURA STOKKING
ODP OPERATIONS SUPT: BARRY HARDING
ODP LAB OFFICER: BURNEY HAMLIN

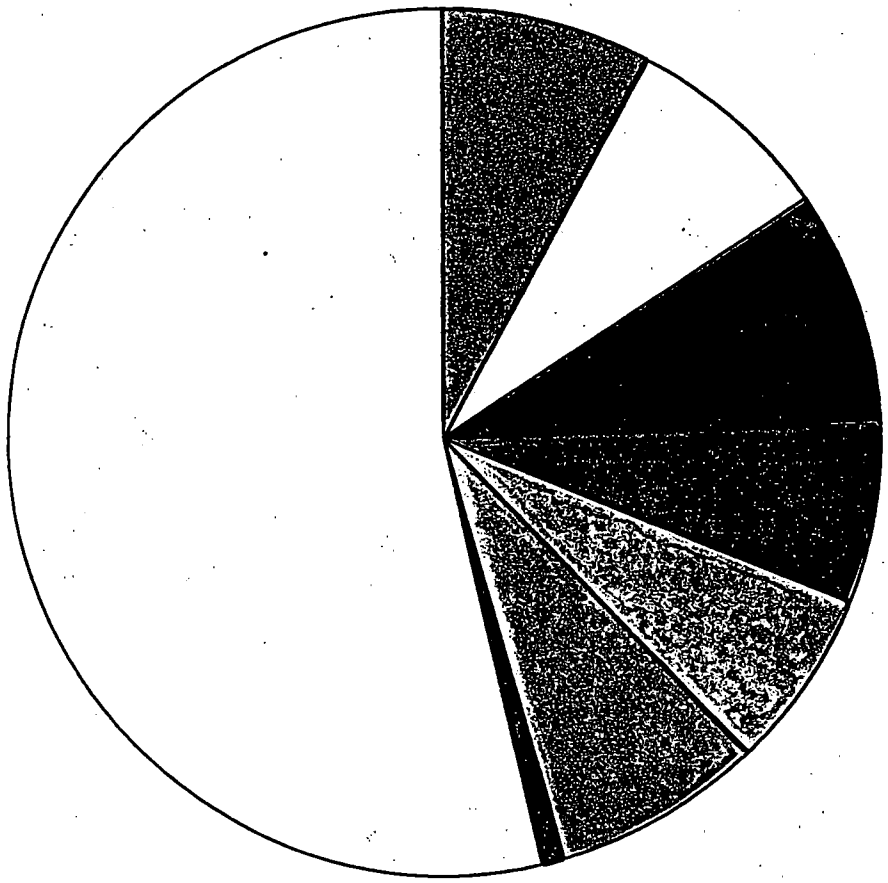
PRE-CRUISE MEETING SEPTEMBER 1992

LEG 149	CO-CHIEF SCIENTISTS:	DALE SAWYER (RICE) BOB WHITMARSH (UK)
IBERIAN ABYSSAL PLAIN	ODP STAFF SCIENTIST: ODP OPERATIONS SUPT: ODP LAB OFFICER:	ANDY FISHER GENE POLLARD BRAD JULSON
	PRE-CRUISE MEETING OCTOBER 1992	
LEG 150	CO-CHIEF SCIENTISTS:	KEN MILLER (RUTGERS) GREG MOUNTAIN (LDGO)
NEW JERSEY SEA LEVEL	ODP STAFF SCIENTIST: ODP OPERATIONS SUPT: ODP LAB OFFICER:	PETER BLUM GLEN FOSS BILL MILLS
LEG 151	CO-CHIEF SCIENTISTS:	EYSTEIN JANSEN (NORWAY) JÖRN THIEDE (GERMANY)
ATLANTIC ARCTIC GATEWAYS	ODP STAFF SCIENTIST: ODP OPERATIONS SUPT: ODP LAB OFFICER:	JOHN FIRTH DAVE HUEY BURNEY HAMLIN
LEG 152	CO-CHIEF SCIENTISTS:	HANS-CHRISTIAN LARSEN (DENMARK) ANDREW SAUNDERS (UK)
EAST GREENLAND MARGIN	ODP STAFF SCIENTIST: ODP OPERATIONS SUPT: ODP LAB OFFICER:	TO BE NAMED RON GROUT BRAD JULSON


MID-ATLANTIC TRANSECT
EW9009 MCS
Existing Drillsites
DSDP
Offshore Exploration
Onshore Misc.
Proposed Drillsites
JOIDES Resolution
Supplemental Platform
Onshore Borehole
76°
75°
74°
73°
72°
41°N
40°
39°
38°
CRETACEOUS OUTCROP
CENOZOIC OUTCROP
Island Beach
Atlantic City
Cape May
Lewes
Bethany Beach
1
2
3
4
5
6
7
8
9
9A
10
11
200 m
1000 m


OW
7-9/10
(close or very close
pack ice)
1-3/10
(very open pack ice)
4-6/10
(open pack ice)
EG 63-1
EG 63-2
ICE AT THE END OF OCTOBER 1981

Co-Chief Tally by Country
Legs 101 - 152



	End 1993 Expectation
CAN/AUS - 8	9
ESF - 8	7-1/2
France - 9	9
Germany - 7	9
Japan - 7	8
UK - 8	8
USSR/Russia - 1	2-1/2
USA - 53	

International Partners Total: 48

U.S. CO-CHIEFS BY INSTITUTE

LEGS 101-152

INSTITUTE	NO.	NAMES
University of Miami	4	Schlager/Honnorez/Becker/Becker
University of Texas at Austin	1	Austin
Texas A&M University	1	Sager
University of Rhode Island	4	Arthur/Detrick/Kennett/Larson
University of Washington	0	
Oregon State	3	Suess/Duncan/Pisias
Scripps	5	Salisbury/Winterer/Natland/Hawkins/Winterer
Lamont	5	Kastens/Ruddiman/Chochran/Weissel/Mountain
Woods Hole	4	Bryan/von Herzen/Dick/Gillis
University of Hawaii	6	Fryer/Taylor/Kroenke/Wilkens/Mottl/Batiza
Univ. of California Santa Cruz	2	Moore/Silver
USGS	4	von Huene/Barron/Greene/Lewis
University of Florida	1	Ciesielski
Brown	1	Prell
Florida State University	1	Wise
NSF	1	Haq
Stanford	1	Ingle
Harvard	1	Dziewonski
Independent	2	Scott/Pisciotto
University of Tulsa	1	Haggerty
University of Michigan	2	Rea/Alt
Lehigh	1	Carson
Rice	1	Sawyer
Rutgers	1	Miller

Proposed Distribution Dates of ODP Volumes - Fiscal Year 1992

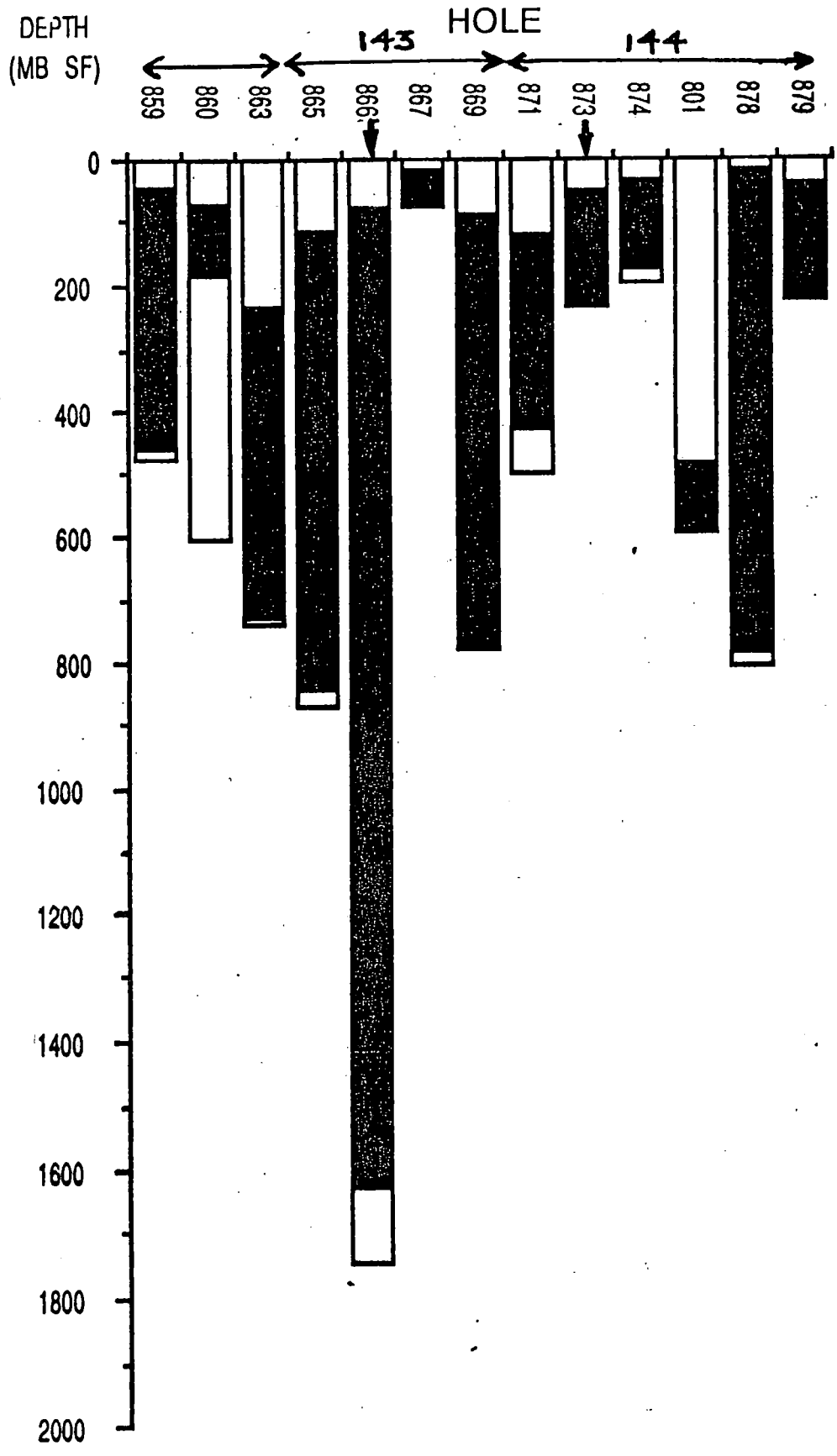
	Initial Reports Volume	Date to Printer	Date Distributed	Months Post-Cruise	*Scientific Results* Volume	Date to Printer	Date Distributed	Months Post-Cruise
OCTOBER								
NOVEMBER					121	8-20-91	11-30-91	41
DECEMBER								
JANUARY	136/137	12-10-91	1-27-92	10/8				
FEBRUARY					122	12-19-91	2-28-92	42
MARCH	134	12-19-91	3-7-92	15				
APRIL					120	2-3-92	4-29-92	48
MAY	135	3-6-92	5-29-92	15				
JUNE								
JULY					123 125	4-1-92 4-29-92	7-92 7-92	44 39
AUGUST	138 139	6-23-92 6-25-92	8-92 8-92	13 10	126	6-5-92	8-92	38
SEPTEMBER	140	8-92	9-92	10	127/128	7-14-92	9-92	37/35

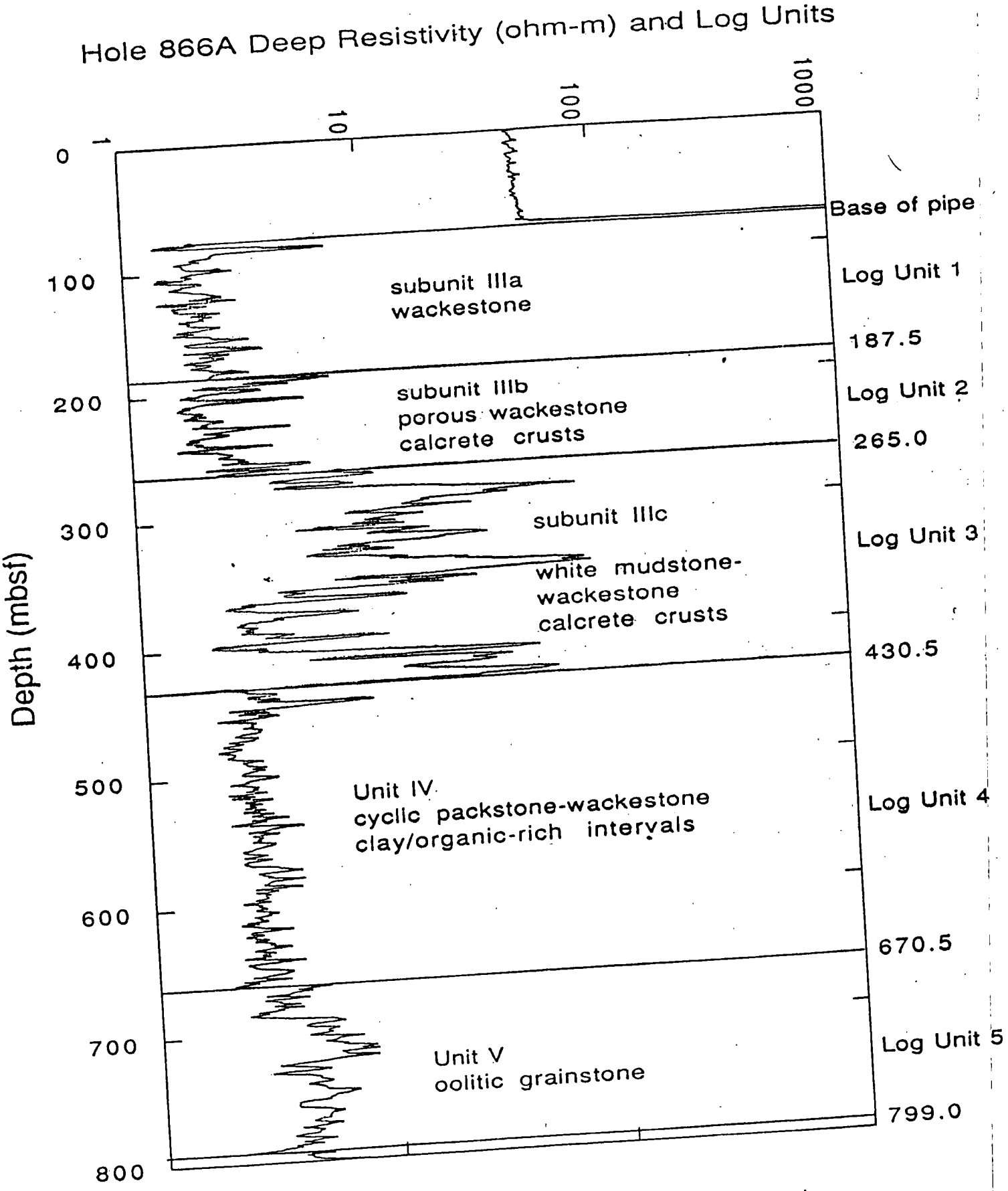
Month-day-year listings indicate actual dates. Month-year listings indicate proposed dates.
July 17, 1992

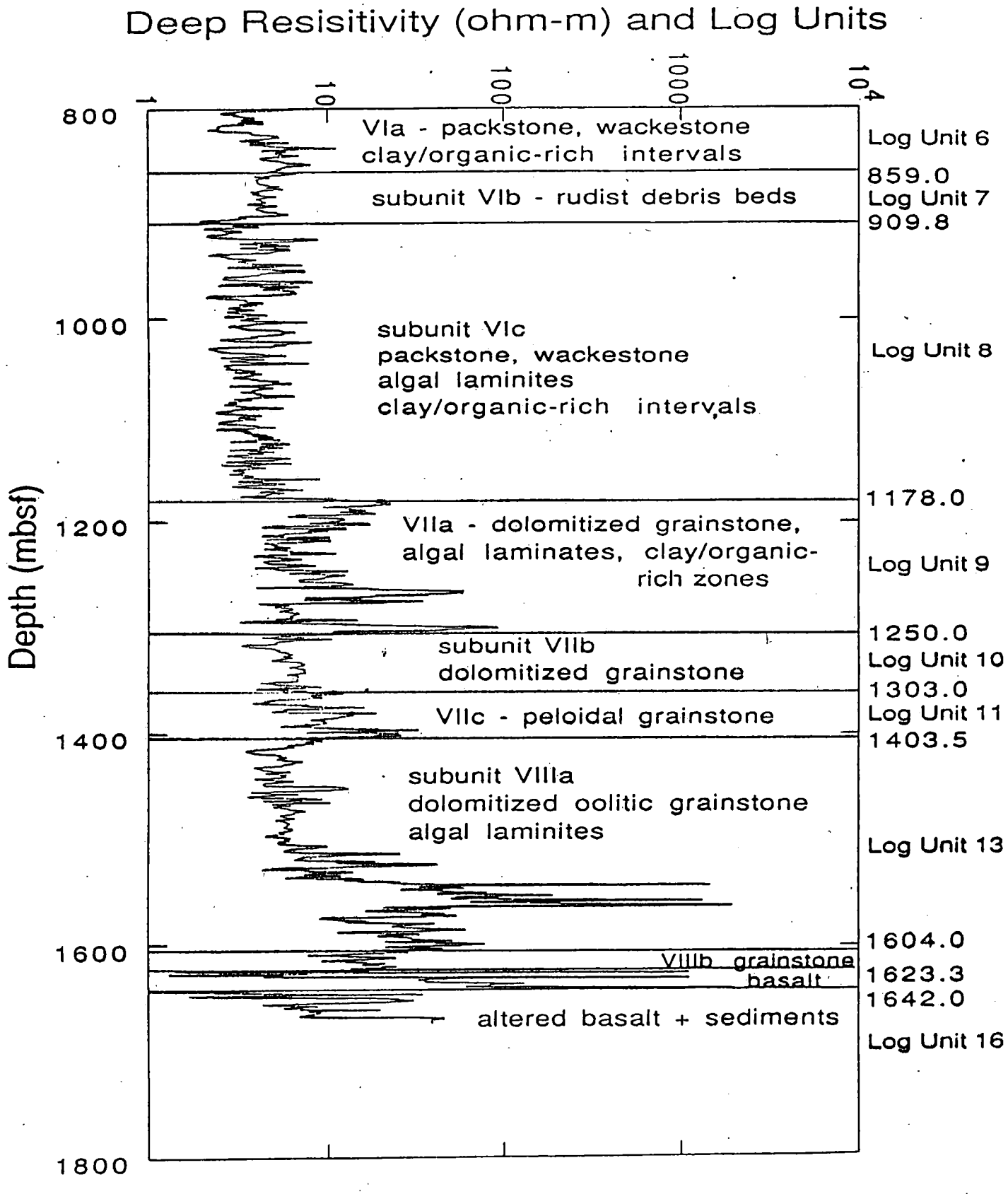
Proposed Distribution Dates of ODP Volumes - Fiscal Year 1993

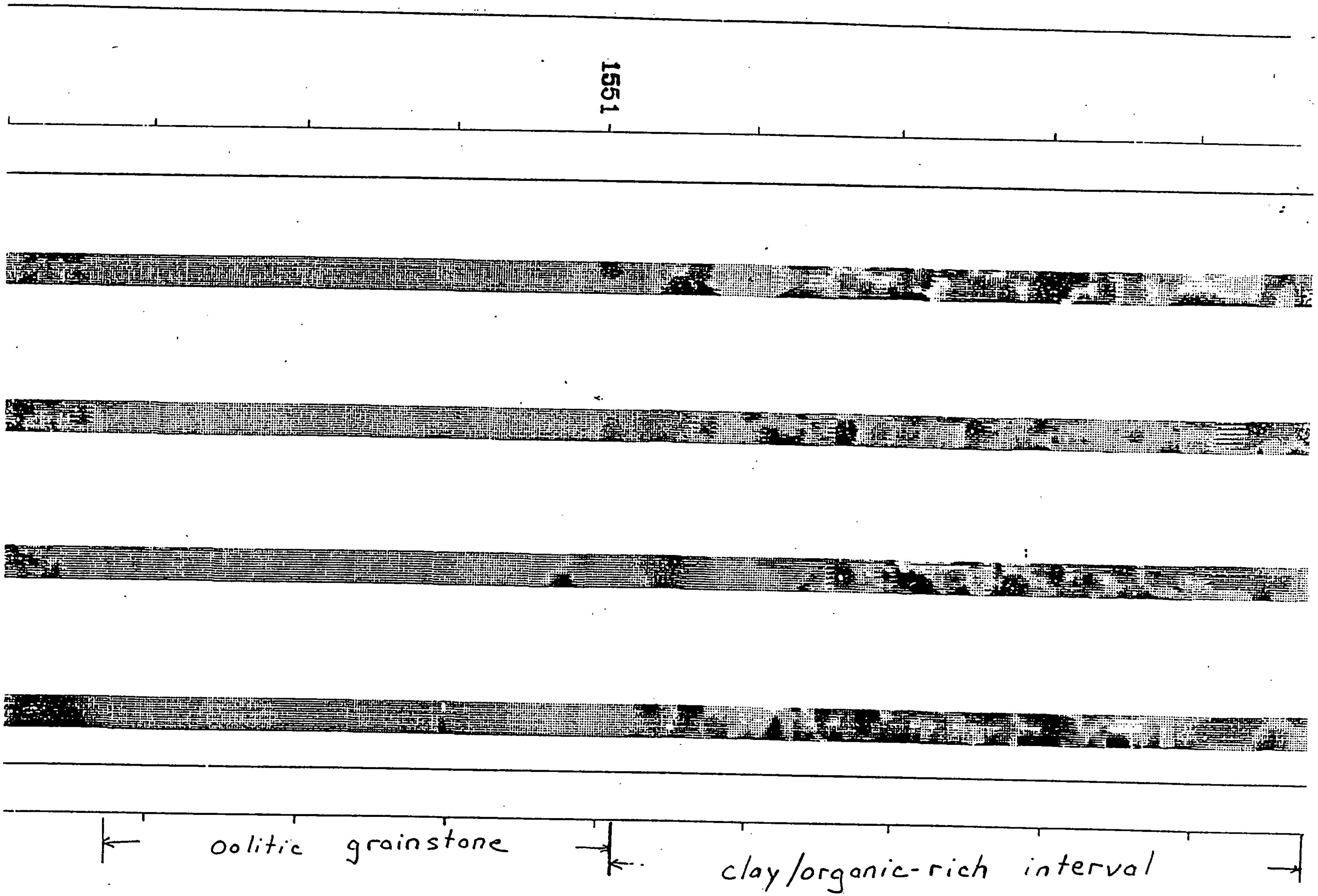
	Initial Reports Volume	Date to Printer	Date Distributed	Months Post-Cruise	*Scientific Results* Volume	Date to Printer	Date Distributed	Months Post-Cruise
OCTOBER								
NOVEMBER								
DECEMBER					129	10-92	12-92	35
JANUARY	141	11-92	1-93	12				
FEBRUARY								
MARCH	142	1-93	3-93	12				
APRIL					130	2-93	4-93	37
MAY	143	3-93	5-93	12	131 132	3-93 3-93	5-93 5-93	35 33
JUNE								
JULY	144	5-93	7-93	12				
AUGUST					133	6-93	8-93	34
SEPTEMBER	145 146	7-93 7-93	9-93 9-93	12 10	134	7-93	9-93	33

July 17, 1992

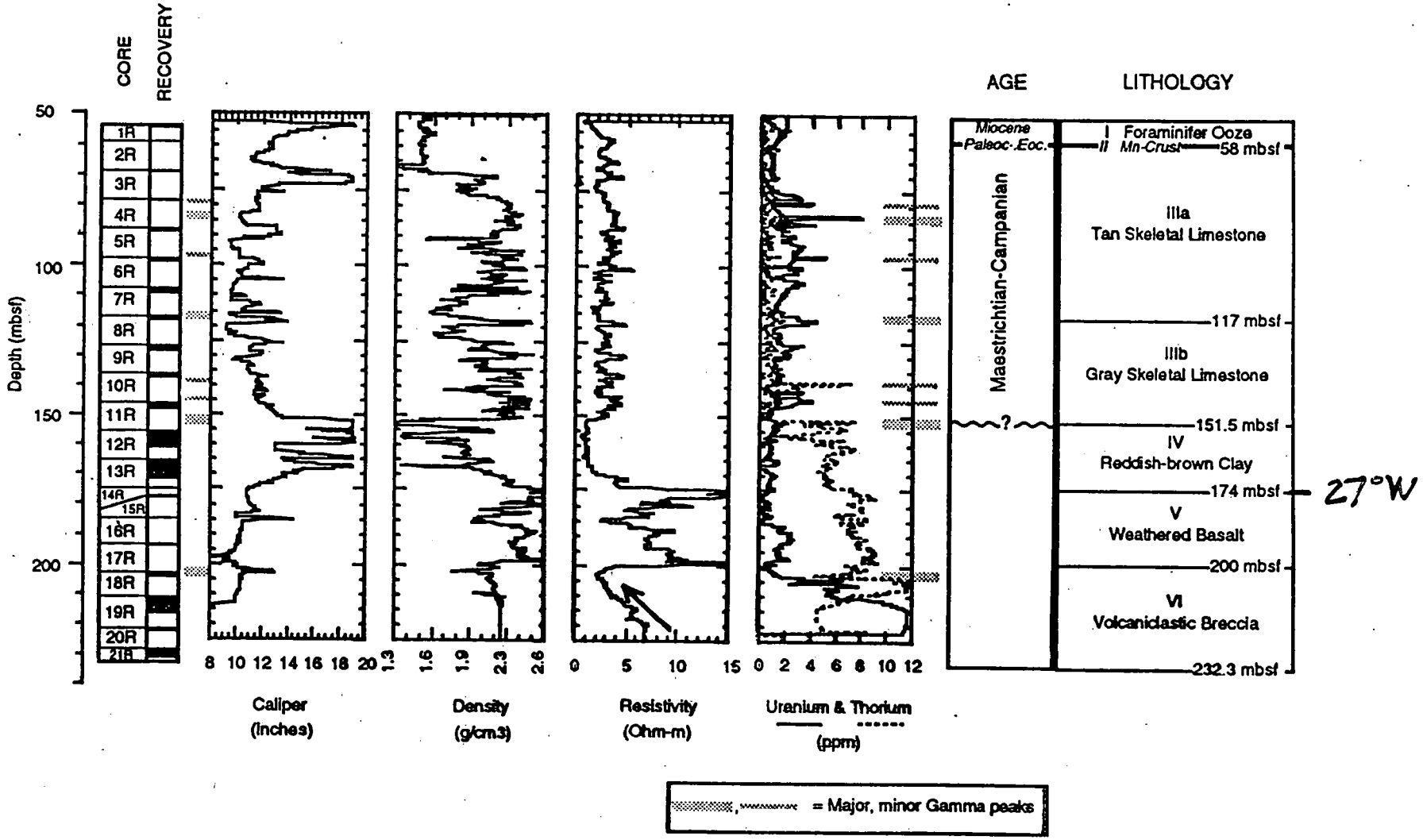

DEPTH
(MB SF)
HOLE
143
144
859
860
863
865
866
867
869
871
873
874
801
878
879
0
200
400
600
800
1000
1200
1400
1600
1800
2000


Hole 866A Deep Resistivity (ohm-m) and Log Units
1
10
100
1000
0
100
200
300
400
500
600
700
800
Depth (mbsf)
Base of pipe
Log Unit 1
187.5
Log Unit 2
265.0
Log Unit 3
430.5
Log Unit 4
670.5
Log Unit 5
799.0
subunit IIIa
wackestone
subunit IIIb
porous wackestone
calcrete crusts
subunit IIIc
white mudstone-
wackestone
calcrete crusts
Unit IV
cyclic packstone-wackestone
clay/organic-rich intervals
Unit V
oolitic grainstone


Deep Resisitivity (ohm-m) and Log Units
1
10
100
1000
10⁴
800
1000
1200
1400
1600
1800
Depth (mbsf)
VIa - packstone, wackestone
clay/organic-rich intervals
subunit VIb - rudist debris beds
subunit VIc
packstone, wackestone
algal laminites
clay/organic-rich intervals
VIIa - dolomitized grainstone,
algal laminates, clay/organic-
rich zones
subunit VIIb
dolomitized grainstone
VIIc - peloidal grainstone
subunit VIIIa
dolomitized oolitic grainstone
algal laminites
VIIIb grainstone
basalt
altered basalt + sediments
Log Unit 6
859.0
Log Unit 7
909.8
Log Unit 8
1178.0
Log Unit 9
1250.0
Log Unit 10
1303.0
Log Unit 11
1403.5
Log Unit 13
1604.0
1623.3
1642.0
Log Unit 16

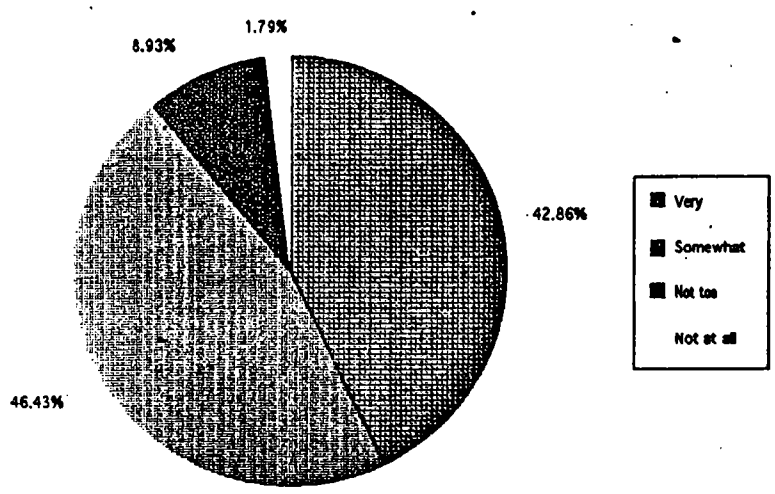

1551
oolitic grainstone
clay/organic-rich interval

Hole 873A Stratigraphy from Downhole Logs

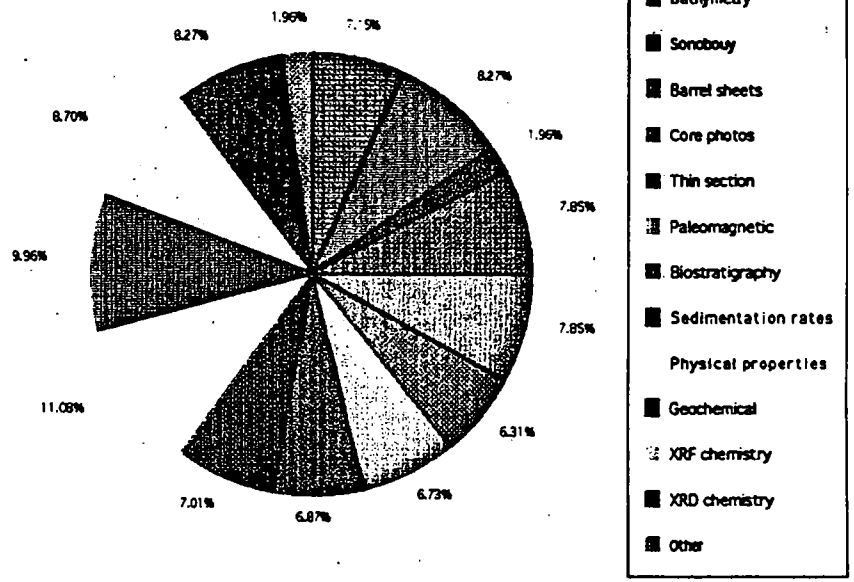


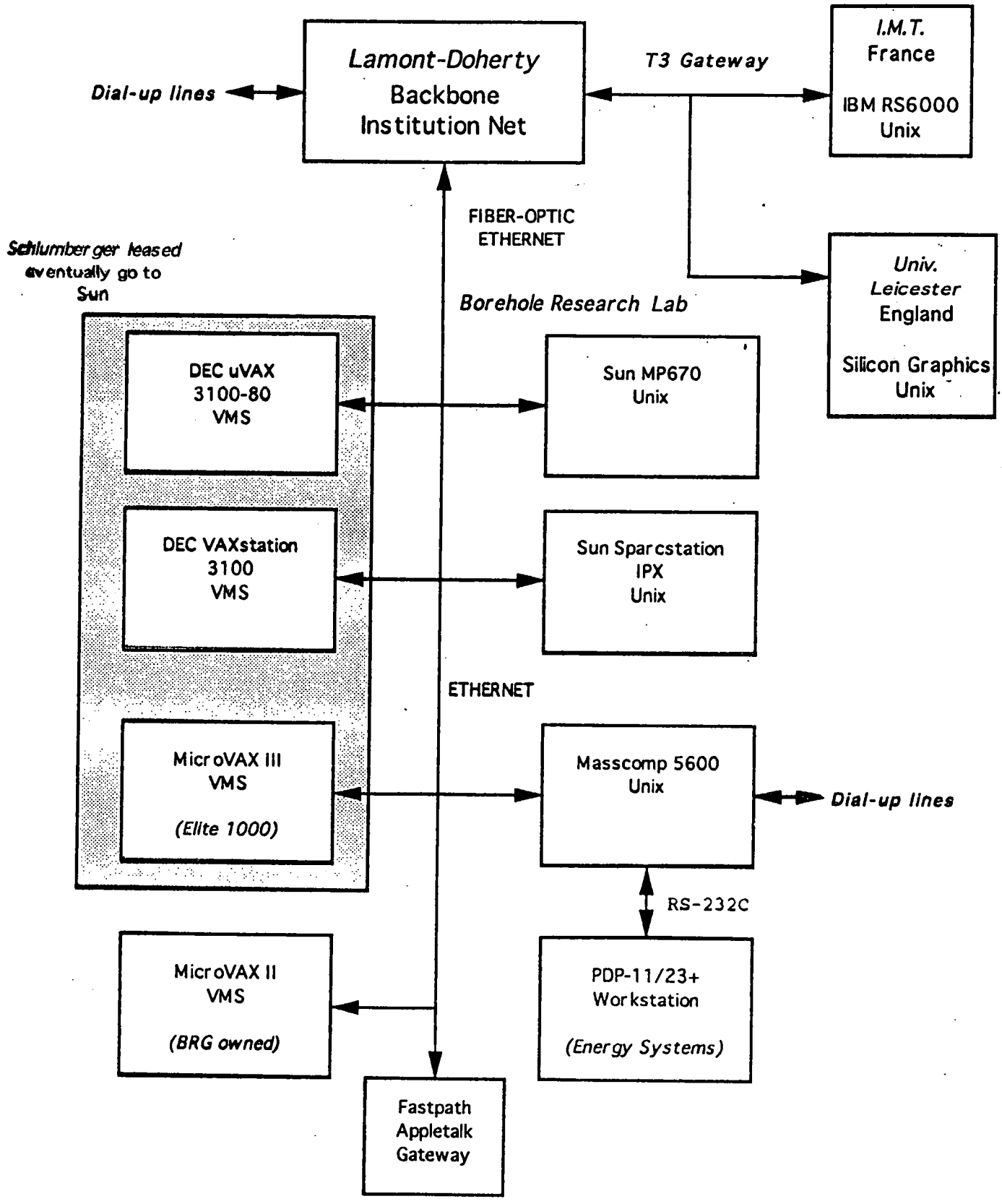
27°W

If the ODP database were to be made available as a free on-line service, how useful would it be to you?



What other data (ODP or otherwise) would you like to have available through an on-line service?




Lamont-Doherty
Backbone
Institution Net
Dial-up lines
T3 Gateway
I.M.T.
France
IBM RS6000
Unix
FIBER-OPTIC
ETHERNET
Schlumberger leased
eventually go to
Sun
Borehole Research Lab
Univ.
Leicester
England
Silicon Graphics
Unix
DEC uVAX
3100-80
VMS
Sun MP670
Unix
DEC VAXstation
3100
VMS
Sun Sparcstation
IPX
Unix
ETHERNET
MicroVAX III
VMS
(Elite 1000)
Masscomp 5600
Unix
Dial-up lines
RS-232C
MicroVAX II
VMS
(BRG owned)
PDP-11/23+
Workstation
(Energy Systems)
Fastpath
Appletalk
Gateway

BRG STAFF CHANGES AS OF 8/1/92

FY 92 BUDGET: Personnel	Position
R. Anderson	Director, Logging Ops
R. Jarrard	Chief Scientist
X. Golovchenko	Operations Manager
D. Goldberg	Project Scientist
M. Lyle	Project Scientist
K. Rodway	Project Coordinator
C. Broglia	Log Analysis Mgr.
E. Pratson	Log Analyst
R. Reynolds	Log Analyst
[redacted]	Log Analyst
J. Tivy	Asst. Log Analyst
M. Hobart	Computer Systems Mgr.
[redacted]	Systems Engineer
D. Roach	Logistics Manager
J. Schwartz	Research Engineer
J. Gittings	Secretary
B. Batchelder	Draftsperson
T. Chabernaud	Grad Student
C. Wilkinson	Grad Student
W. He	Grad Student

as of 8/1/92: Personnel	Position
D. Goldberg	Director, Logging Ops
[redacted]	Chief Scientist
K. Rodway	Operations Manager
X. Golovchenko	Project Scientist
P. deMenocal^	Project Scientist
[redacted]	Project Coordinator
C. Broglia	Log Analysis Mgr.
E. Pratson	Log Analyst
R. Reynolds	Log Analyst
[redacted]	Log Analyst
J. Tivy	Graphics Log Analyst
M. Hobart	Computer Systems Mgr.
F. Filice^	Systems Engineer
[redacted]	Logistics Manager
A. Meister^	Research Engineer
J. Gittings	Secretary
[redacted]	Draftsperson
T. Chabernaud	Grad Student
C. Wilkinson	Grad Student
[redacted]	Grad Student
D. Barnes^	Asst. Log Analyst

^ FY 92 new personnel

The following is the Lamont Logging staffing for Legs 146 through 150.

Leg 146	Rich Jarrard, U. Utah, L. Scientist Katherine Rodway, Lamont, Logging Technician
Leg 147	Bernard Célérier, Marseille, L. Scientist
Leg 148	Philippe Pezard, Marseille, L. Scientist Frank Filice, Lamont, Logging Technician
Leg 149	Mike Hobart, Lamont, Logging Scientist To be named, Lamont, Logging Trainee
Leg 150	John Ladd, Lamont, Logging Scientist

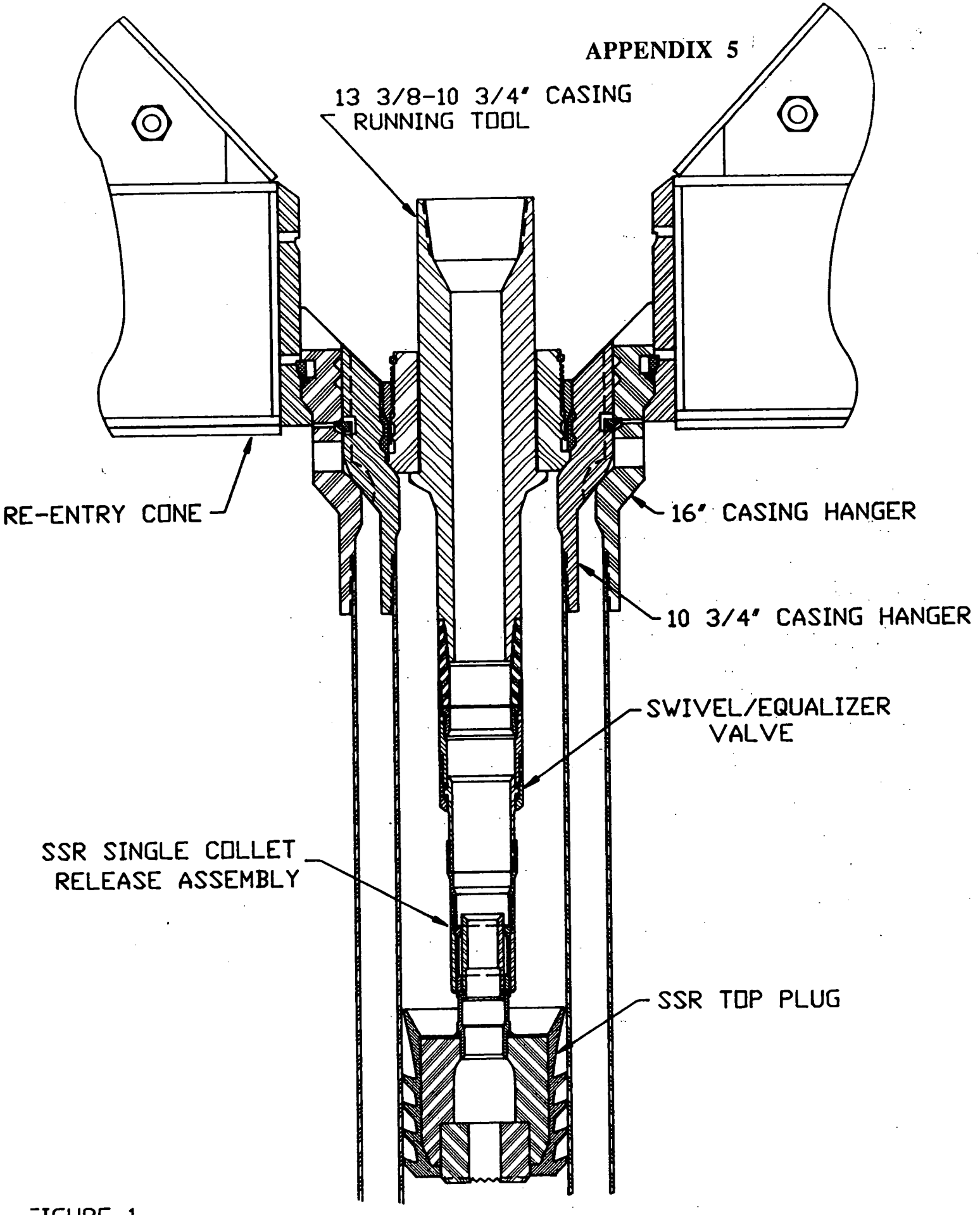
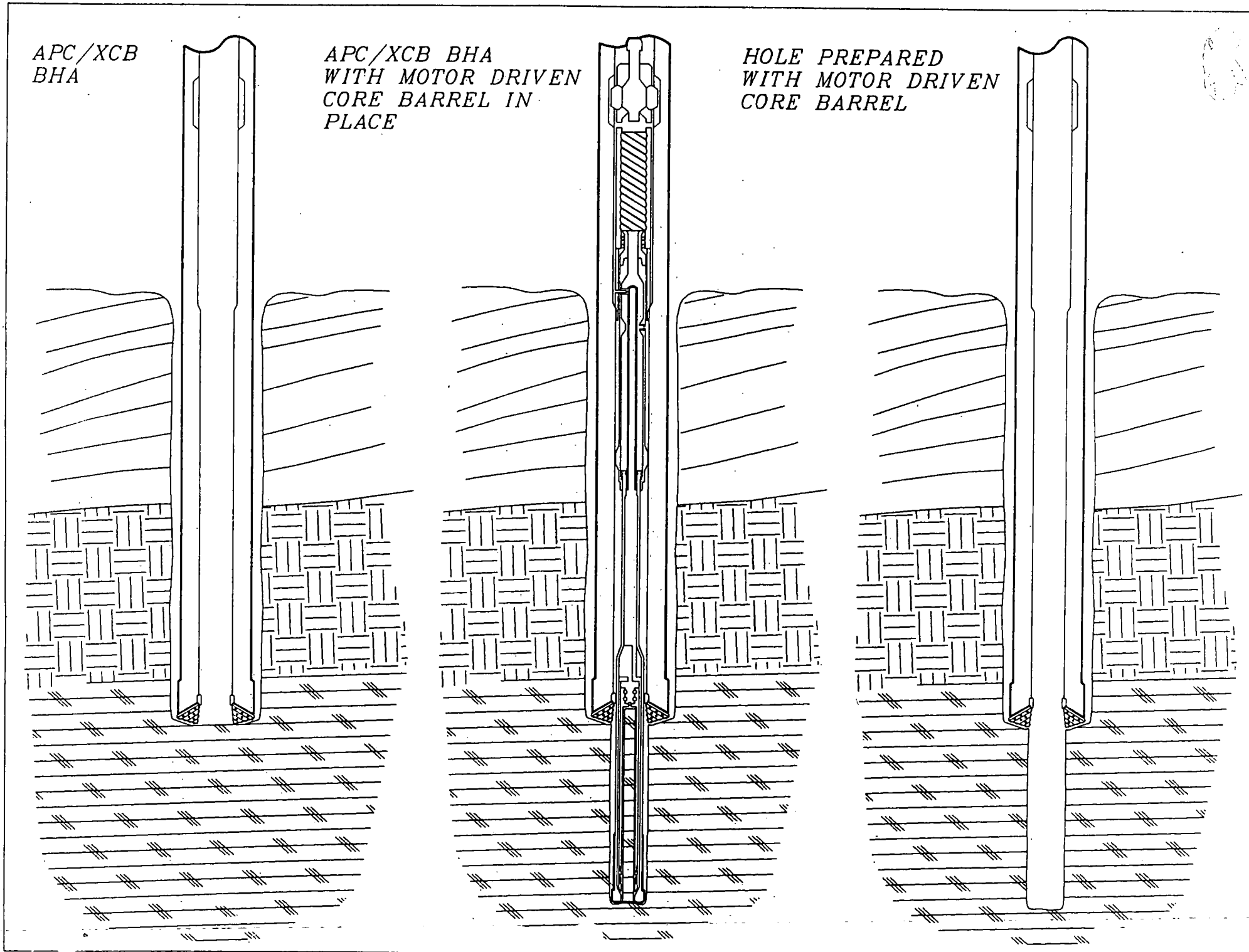
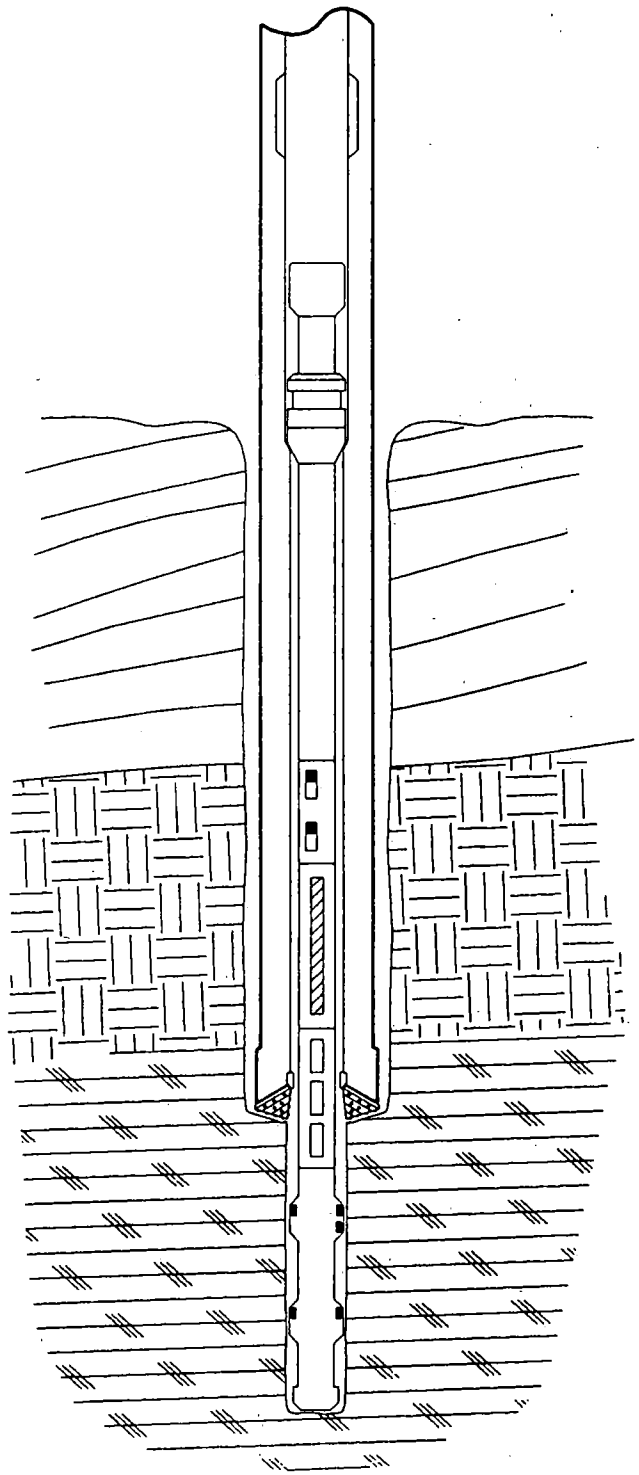
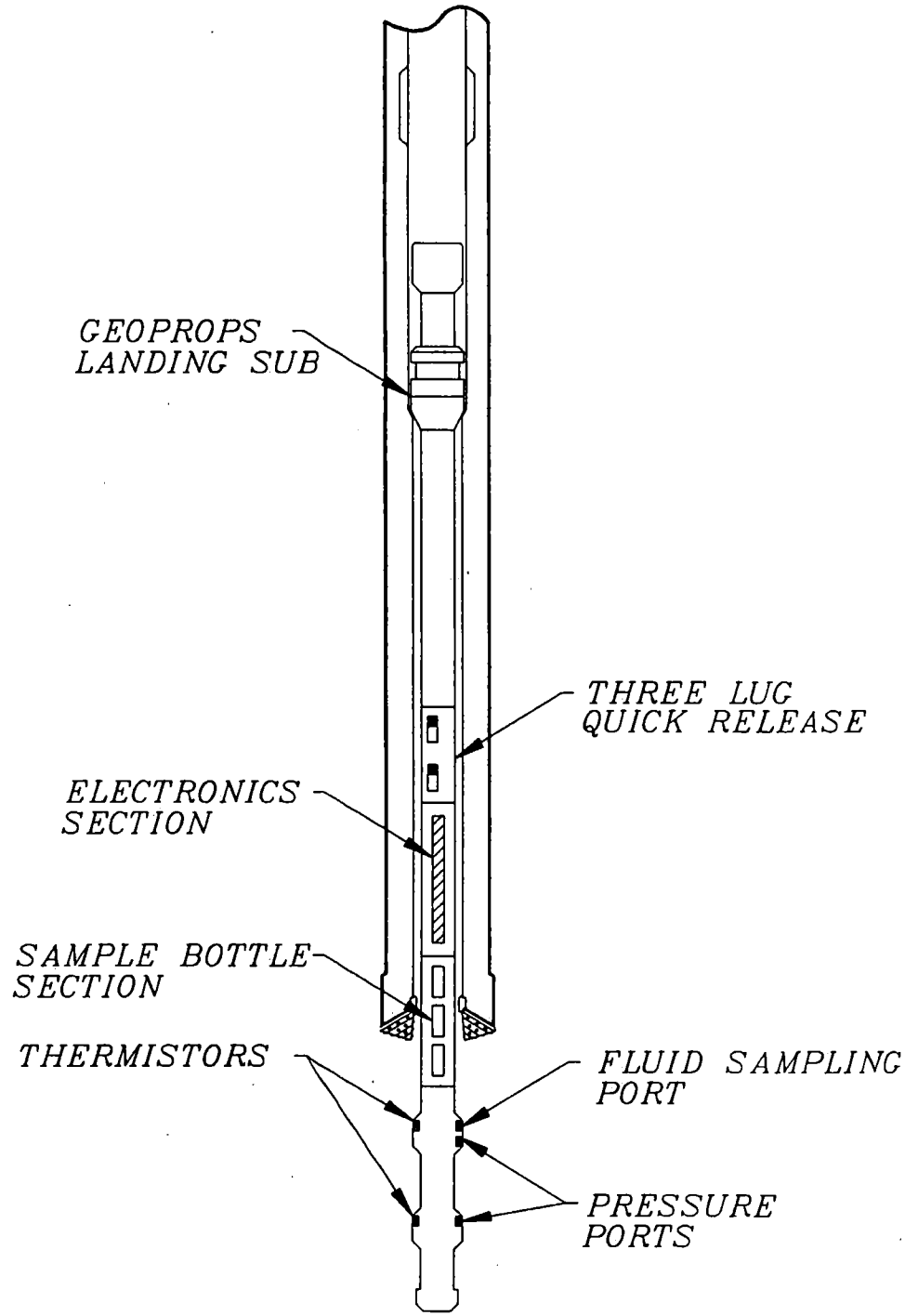


FIGURE 1

HALLIBURTON SSR WITH
DRIL-QUIP CASING SYSTEM


APC/XCB BHA
APC/XCB BHA WITH MOTOR DRIVEN CORE BARREL IN PLACE
HOLE PREPARED WITH MOTOR DRIVEN CORE BARREL




GEOPROPS
LANDING SUB
THREE LUG
QUICK RELEASE
ELECTRONICS
SECTION
SAMPLE BOTTLE
SECTION
THERMISTORS
FLUID SAMPLING
PORT
PRESSURE
PORTS

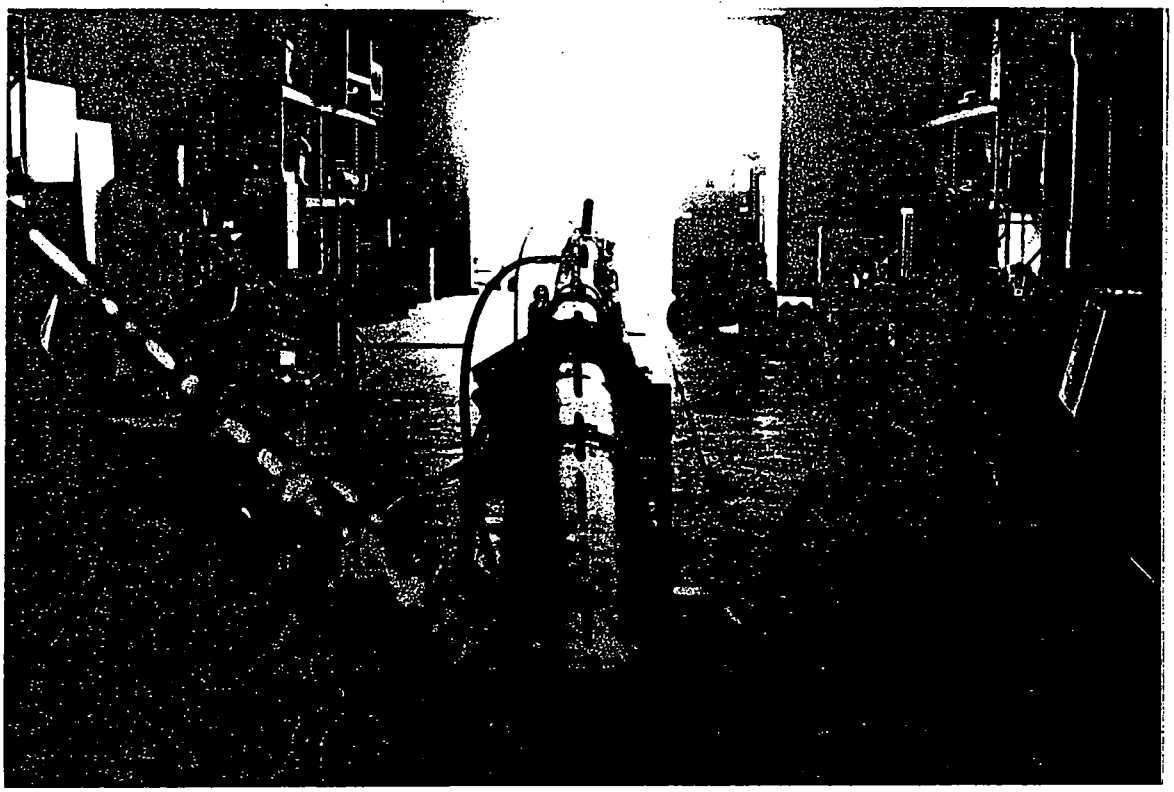
GEOPROPS DATA SHEET

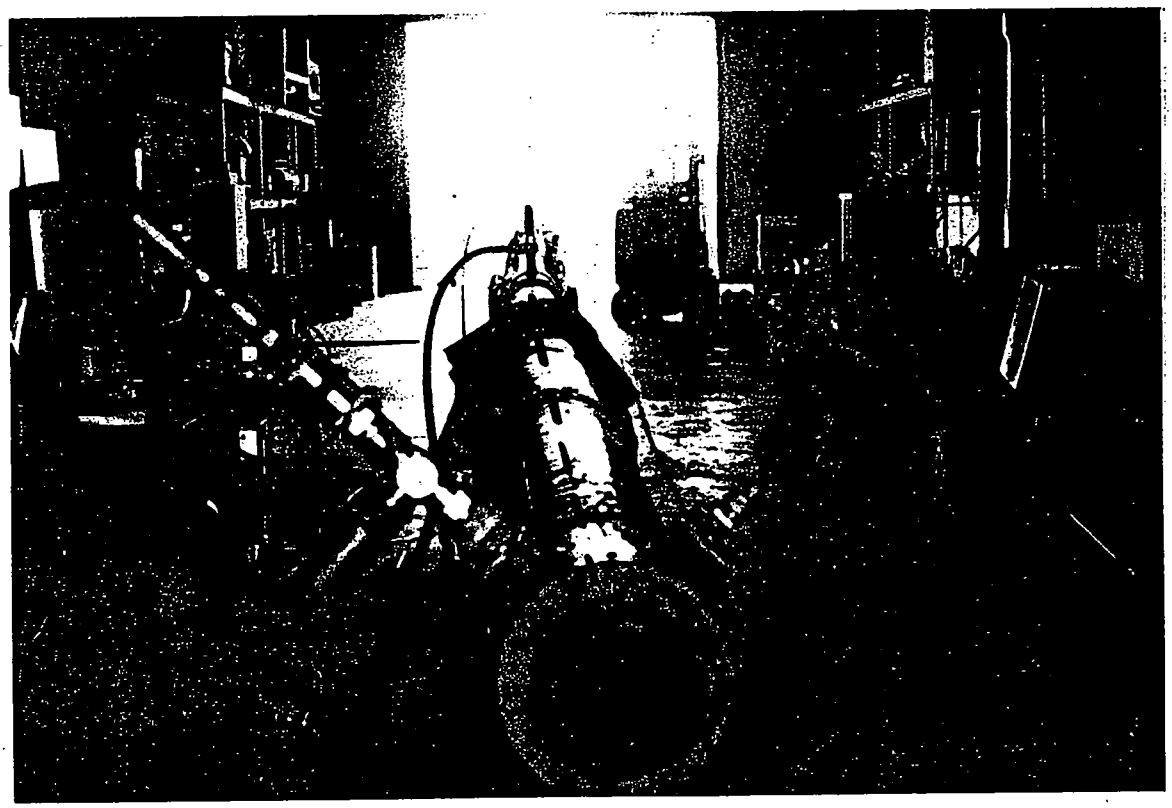
2 FORMATION PRESSURES	– UPPER & LOWER PACKERS – 10,000 PSI MAX – 2.5 PSI RESOLUTION
2 FORMATION TEMPERTURES	– 100° CELSIUS MAX – 0.010° RESOLUTION
3 SEGREGATED FLUID SAMPLES	– 3(EA) 20 CC BOTTLES
ELECTRONICS	– 15 SECOND SAMPLING FREQUENCY – 4–1/4 HOUR MAX MEMORY
PACKERS	– 17 INCHES BETWEEN ELEMENTS – 25 INCH SEAL LENGTH PER ELEMENT
LENGTHS	– 24 FEET TOTAL – 7 FEET PACKER SECTION – APPROX 10 FEET EXTENSION BEYOND BIT

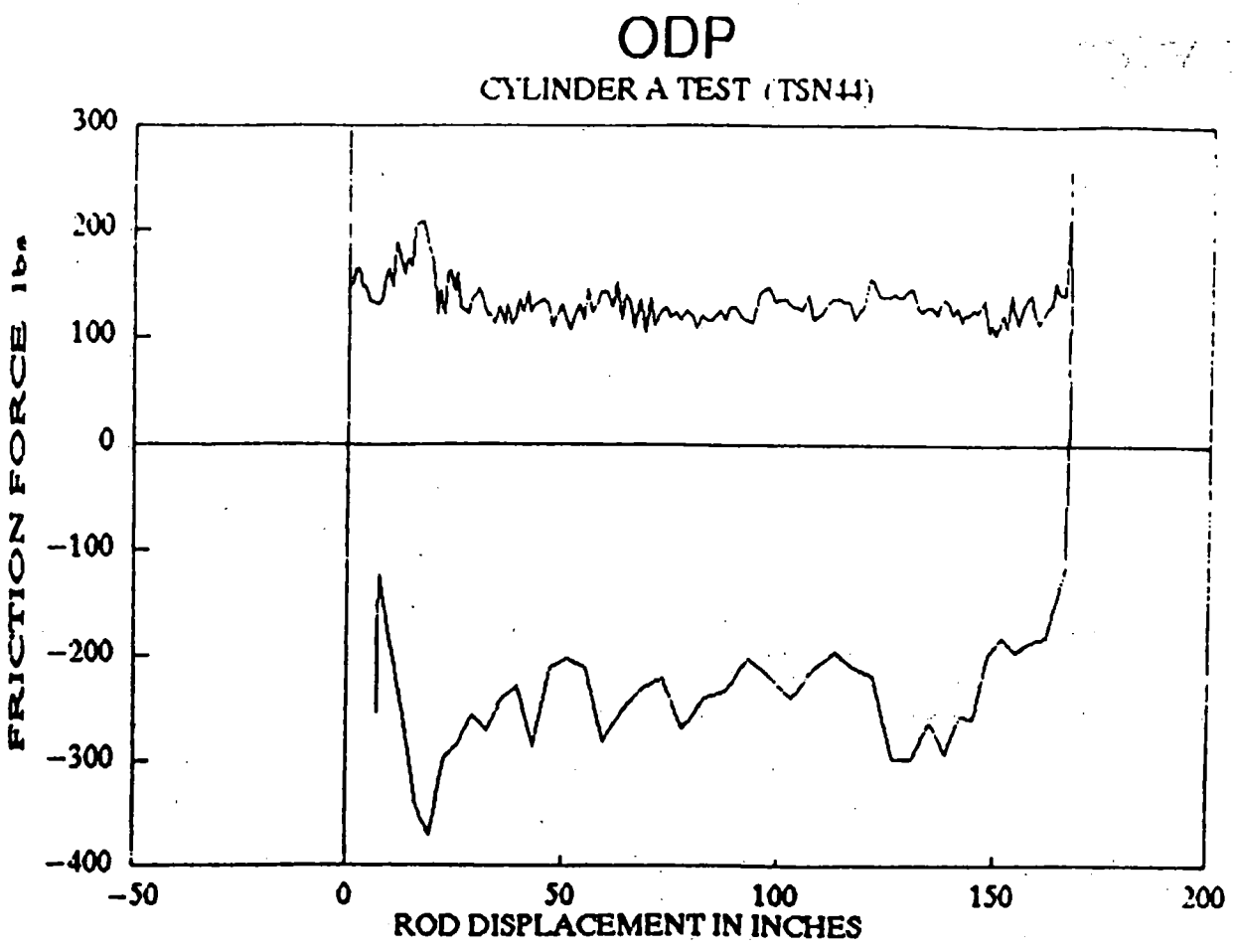
EQUIPMENT STATUS REPORT

EQUIPMENT	STATUS
1. Core-Log Integration	
a. Unix-based Workstation	Purchased 2 Sun SPARCstation 10/30's
b. Natural Gamma	In Progress- Leg 147
c. MST Upgrade	Under Evaluation
d. Resistivity	Under Evaluation
2. Color Measurement Instrument	Purchased Minolta CM2002 32-band Spectral Analyzer/Spectrophotometer- Leg 145
3. Bar Code System	Pending JOI Approval
4. Carbonate Autosampler	Under Evaluation
5. Seismic Workstation	Under Evaluation- Need to Integrate with Database Upgrade
6. Auto Titration	Under Evaluation
7. Seismic Towing System	In Progress

A. Binocular Zoom Microscope Polarized Transmitted/Reflected Light, Rotatable Stage	Ordered Zeiss SV11, 4-400X
B. Steel Rock Grinding Barrels	Purchased from SPEX
C. Al-Ceramic Rock Jaw Crusher	Purchased from SPEX
D. Universal VCR Plays and Records PAL, SECAM, NTSC VHS videotapes on any monitor	Pending JOI Approval






ODP
CYLINDER A TEST (TSN44)
FRICTION FORCE lbs
300
200
100
0
-100
-200
-300
-400
-50
0
50
100
150
200
ROD DISPLACEMENT IN INCHES

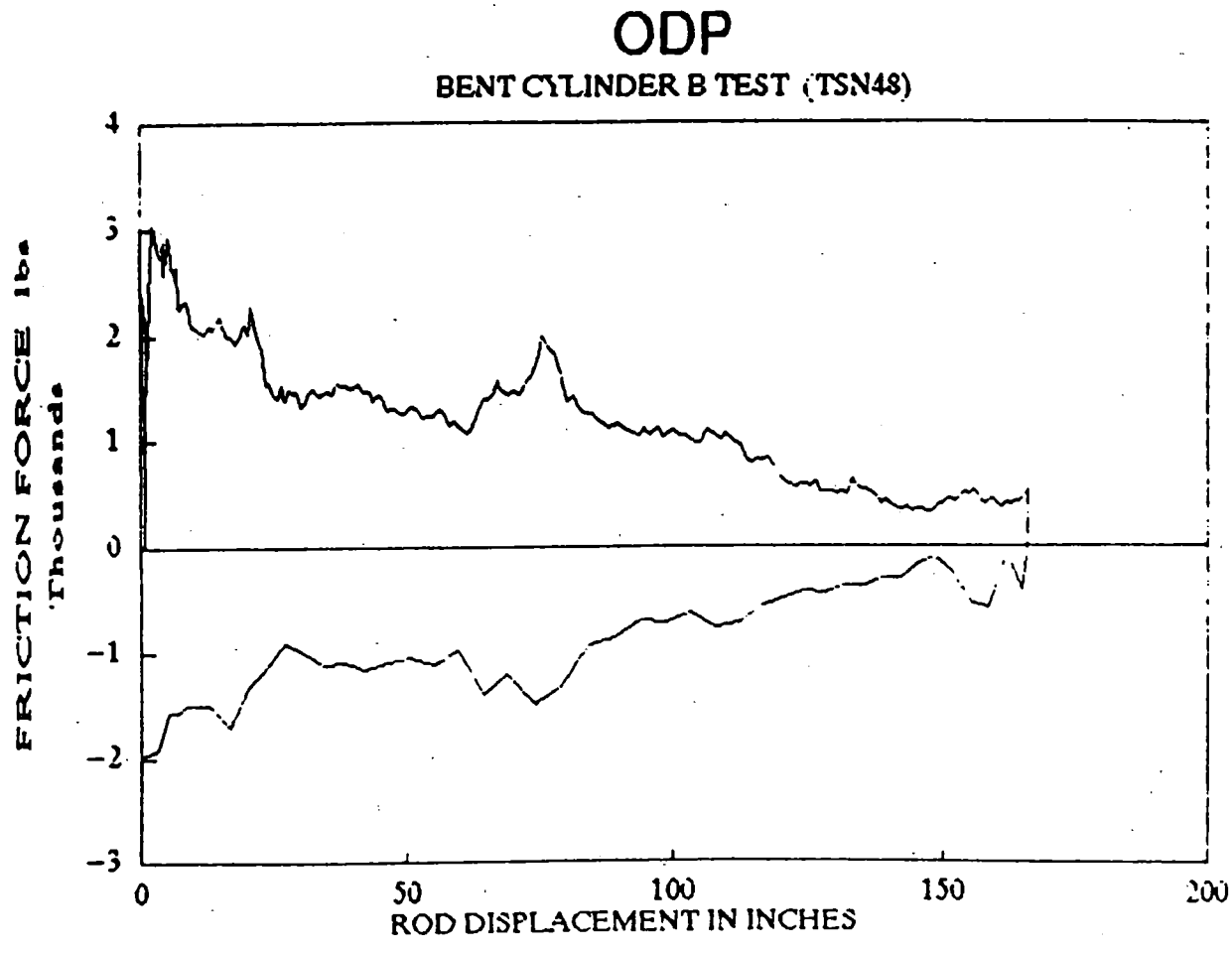
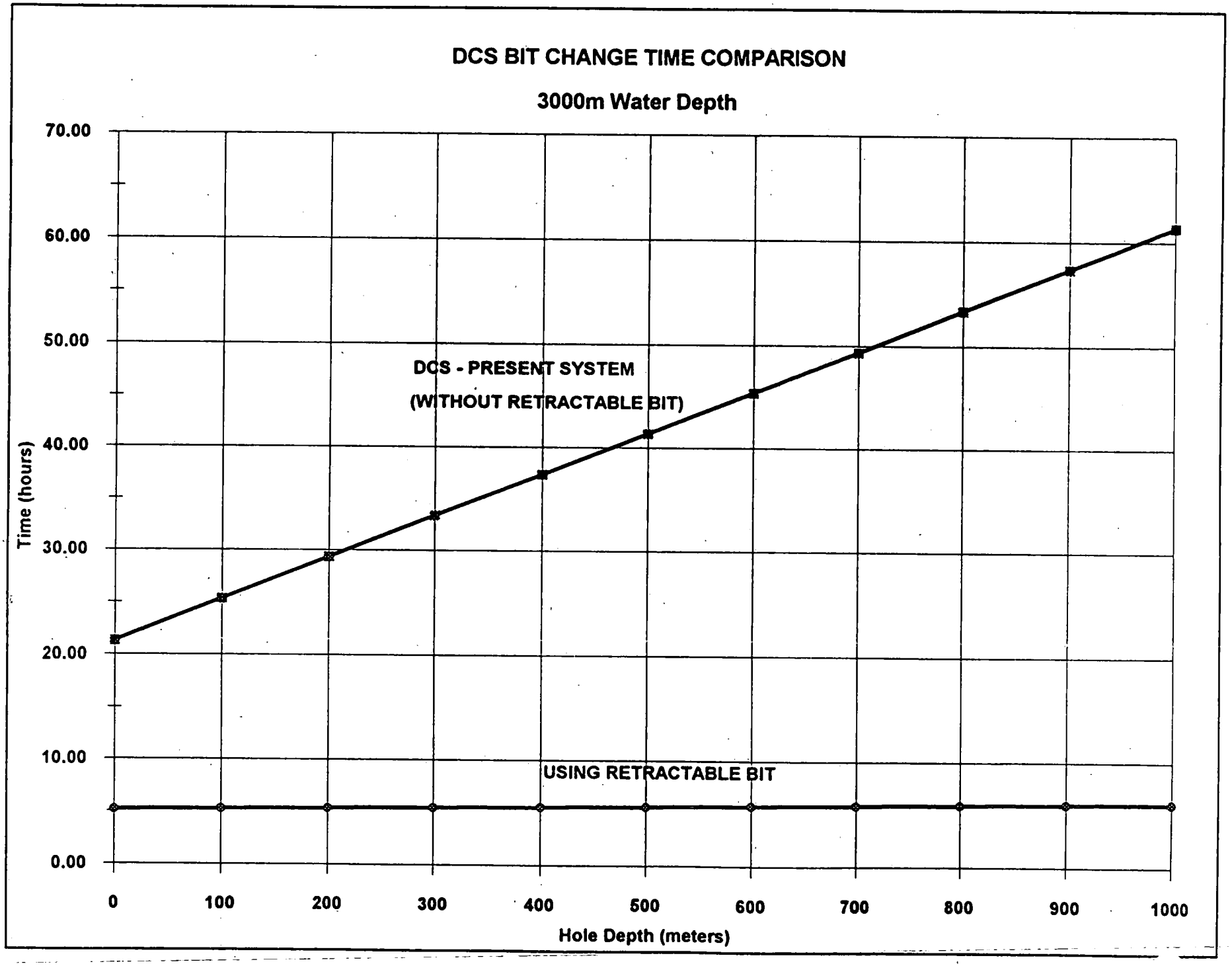
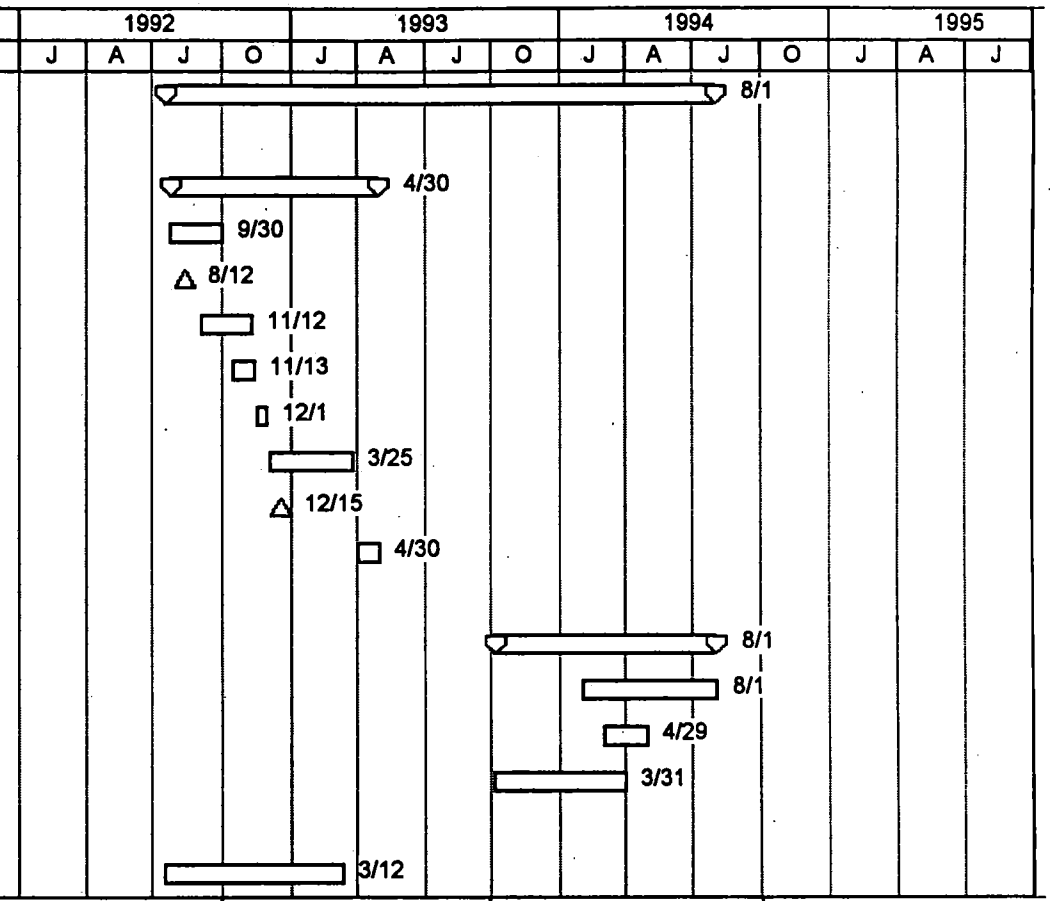

ODP
BENT CYLINDER B TEST (TSN48)
FRICTION FORCE lbs
Thousands
4
3
2
1
0
-1
-2
-3
0
50
100
150
200
ROD DISPLACEMENT IN INCHES

FIGURE 3


DCS BIT CHANGE TIME COMPARISON
3000m Water Depth
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Time (hours)
DCS - PRESENT SYSTEM
(WITHOUT RETRACTABLE BIT)
USING RETRACTABLE BIT
0
100
200
300
400
500
600
700
800
900
1000
Hole Depth (meters)

DCS Near-Term Development Plan (Phase II-C)

Name	Cost ($K)
DCS Near-Term Development	**$1,370**
DCS Mast/Platform/Controls	**$735**
DCS Control System Analysis	$200
Report to PCOM	$0
DCS Structural , Mech, & Hyd. Mods	$150
New Hardware/Software Implementation	$75
Initial Testing	$30
Full Scale Testing	$250
Start Tests	$0
Rig Down/Packup	$30
DCS Mobilization Costs	**$525**
Shipping	$150
Consultants (Leg)	$100
Seafloor Hardware Requirements	$275
DCS Retractable Bit Project	**$110**



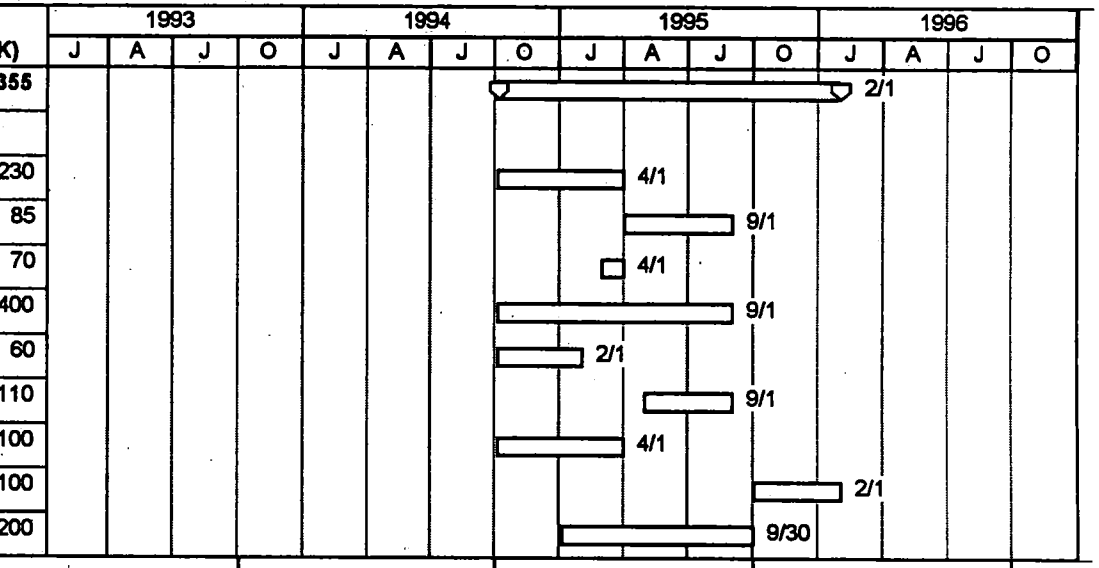
Quarterly Totals, $K	0	205	270	220	150	0	150	200	100	75	0			**Total ($K)**
Cumulative Fiscal Year, $K	0	205	270	490	640	640	150	350	450	525	0			**1370**
			FY1993				**FY1994**				**FY1995**			

Note: Assumes Return to EPR

8/5/92

DCS Long-Term Development Plan (Phase II)

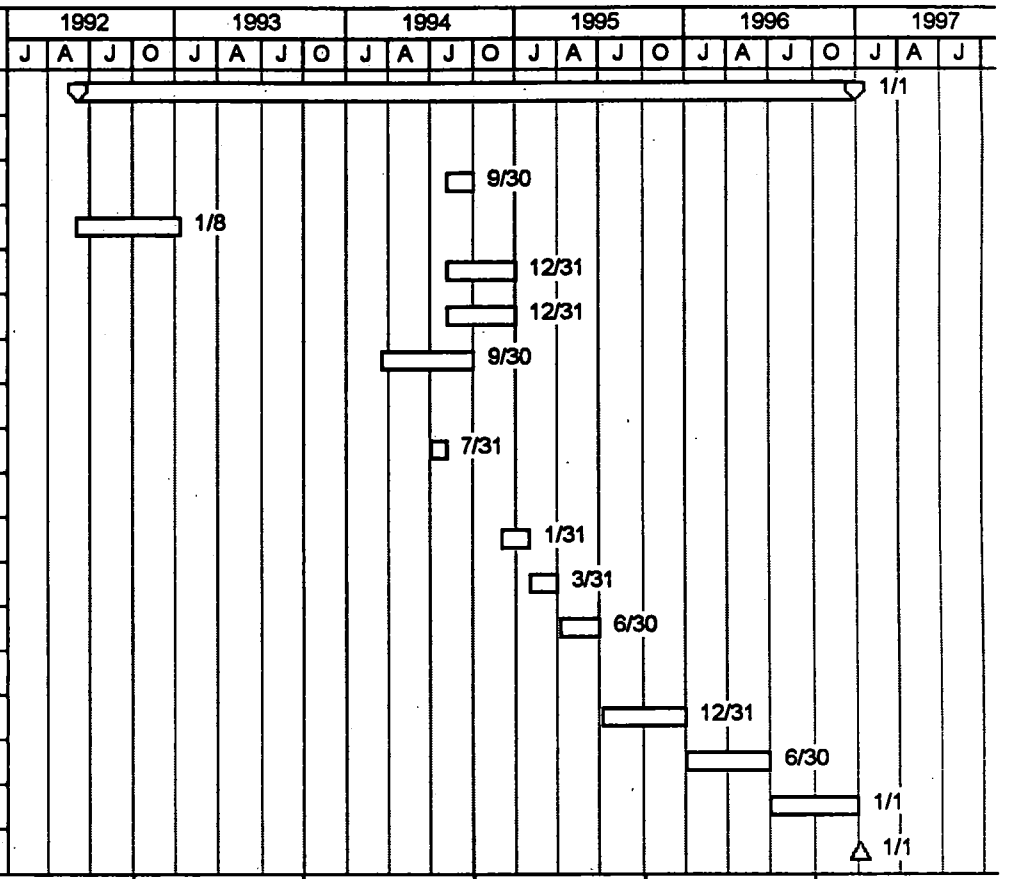
Name	Cost ($K)
DCS Long-Term Development	**1,355**
Back-off Hardware	230
HRB Hanger	85
Bit Testing Program	70
Bit Design and Fabrication	400
DCS Bits and Hardware	60
Ballast, Beacons and Brackets	110
N size Coring/Back-off Hardware	100
Shipping	100
DCS Rig Refurbishment	200



	FY1994	FY1995	FY1996
Fiscal Year Totals, $K	0	1255	100
Cumulative, $K	0	1255	1355

DCS Phase III Development

Name	Cost ($K)
DCS Long-Term Development Plan	2,465
Phase III Concept - w/o Guide Horn (E&W/SES)	15
Design Review Study - Guide Horn Assy	25
Preliminary Design Study - Mast/Feed Cyl. Assy	25
Dynamic Analysis - DCS/Riser Relative Motion	50
DEA Proposal Prep - Industry Participation	0
Review Leg Results - EPR/DCS Phase IIC	0
Review Data from Design/Feasibility Studies	0
Present Findings - DEA Review/Discussion	0
Prepare/Negotiate Contracts	0
Phase III Final Design	100
Phase III Fabrication & Ship Mods	2,100
Phase III Testing/Shipping	150
DCS Phase III Available for Ship Trials	0



Fiscal Year Totals, $K		25	45	95	2225	75
Cumulative, $K		25	70	165	2390	2465
		FY1993	**FY1994**	**FY1995**	**FY1996**	**FY1997**

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APPENDIX I

DIAMOND CORING SYSTEM

GENERAL SUMMARY OF ASSETS/INVENTORY

DCS PLATFORM/DRILL RIG (APPROX $ 1.5 M)

* DCS MAST/PLATFORM/FEED CYLINDER HARDWARE
* 200 HP HYDRAULIC POWER PACK WITH HP FILTER SYSTEM
* 800 HP ELECTRIC TOP DRIVE - 425 TON BEARING RATING
* WIRELINE WINCH (WITH 18,000 FT OF 3/8" 7X19 CABLE)
* SPARE WIRELINE (18,000 FT OF 3/8" 7X19)
* SECONDARY COMPENSATOR/TOP DRIVE CONTROL CONSOLE
* RIG/PLATFORM ELECTRICAL UMBILICALS
* TOP DRIVE/MUD PUMP CTRL/SECONDARY COMPENSATION SOFTWARE/ELECTRONIC CIRCUITRY
* DCS TUBING STRING/DRILLING JOINTS (APPROX 4500 M)
* MISC RIG EQUIPMENT INCLUDING:
  TONGS, TUGGERS, SAFETY SYSTEMS
  WEATHERFORD POWER TONG, ETC.

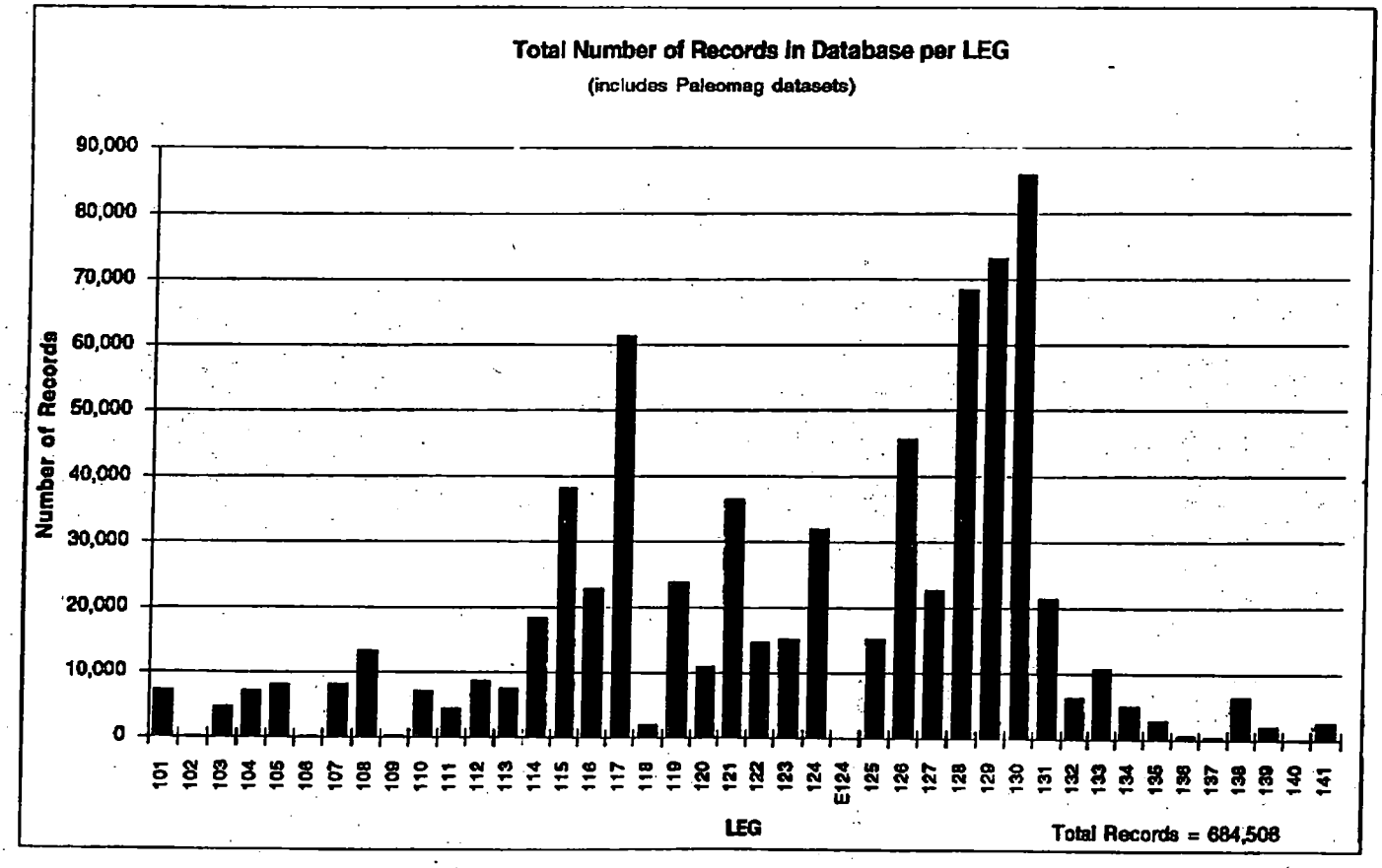
SEA FLOOR/DRILLING HARDWARE (APPROX $ 720 K)

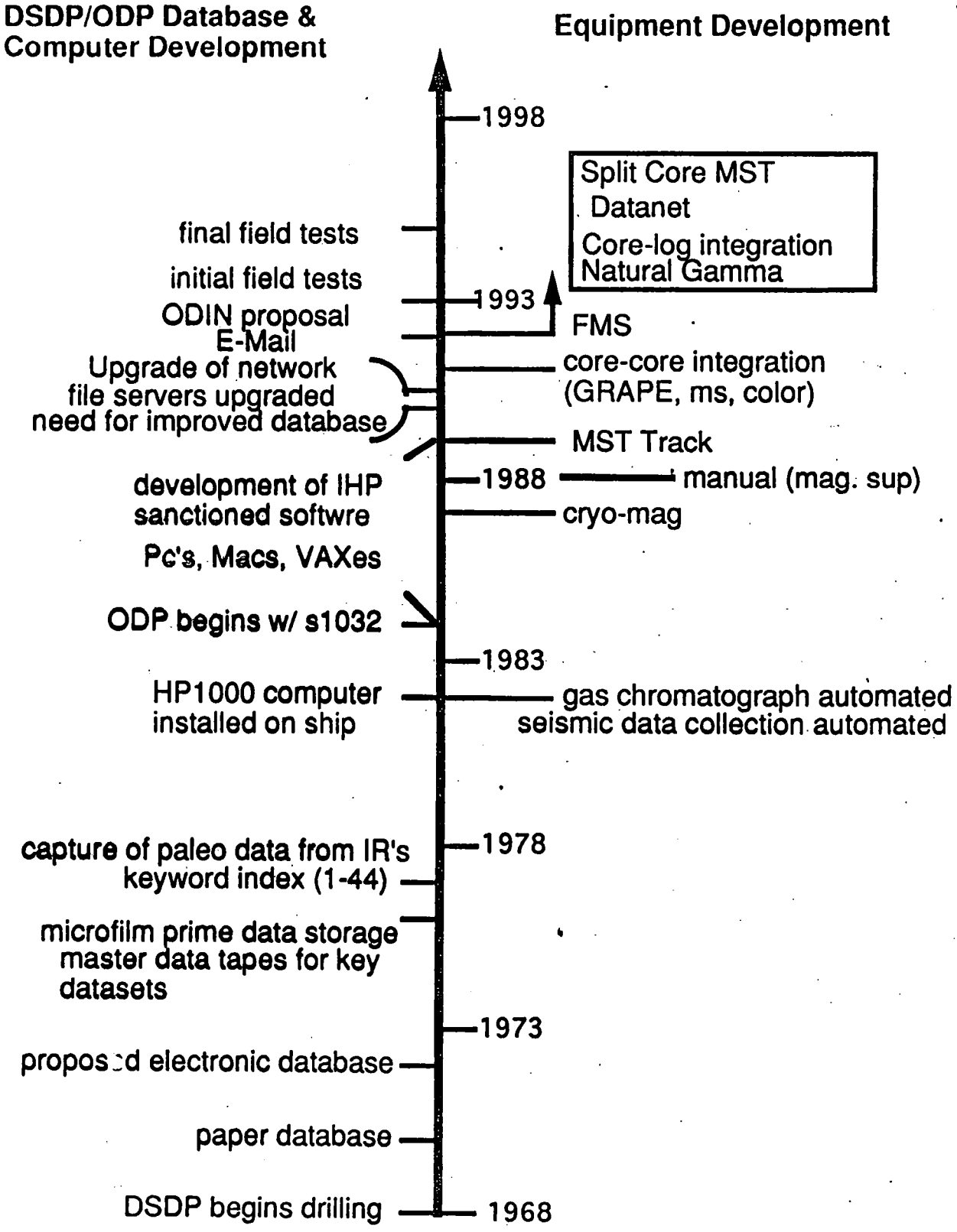
* HARD ROCK GUIDE BASE/CASING HANGER HARDWARE
* TAPERED STRESS JOINTS
* DOUBLE-J RUNNING TOOLS
* 6-3/4" DRILL-IN-BHA SYSTEM (NESTED)
* 10-3/4" DRILL-IN-BHA SYSTEM (NESTED)
* 10-5/8" DRILL-IN-BHA SYSTEM (SINGLE)
* 9-7/8" DRILL-IN-BHA SYSTEM (SINGLE)
* CASING ADVANCER LATCHES FOR PRIMARY DI-BHA CTR BIT
* MODIFIED XCB LATCHES FOR SECONDARY DI-BHA CTR BIT
* 10-3/4" DRILL COLLARS (10' AND 20')
* 6-3/4" DRILL COLLARS (10', 20' AND 30')
* MISC. BACK-OFF SUB HDWR COMPONENTS, SUBS, SPARES
* 10-3/4" STABILIZED BIT SUBS
* 6-3/4" REENTRY GUIDE HARDWARE
* SLIP JOINTS
* WIRELINE DIAMOND CORE BARREL HARDWARE
* WIRELINE SPLIT SPOON, SAMPLER, PISTON CORER HARDWARE

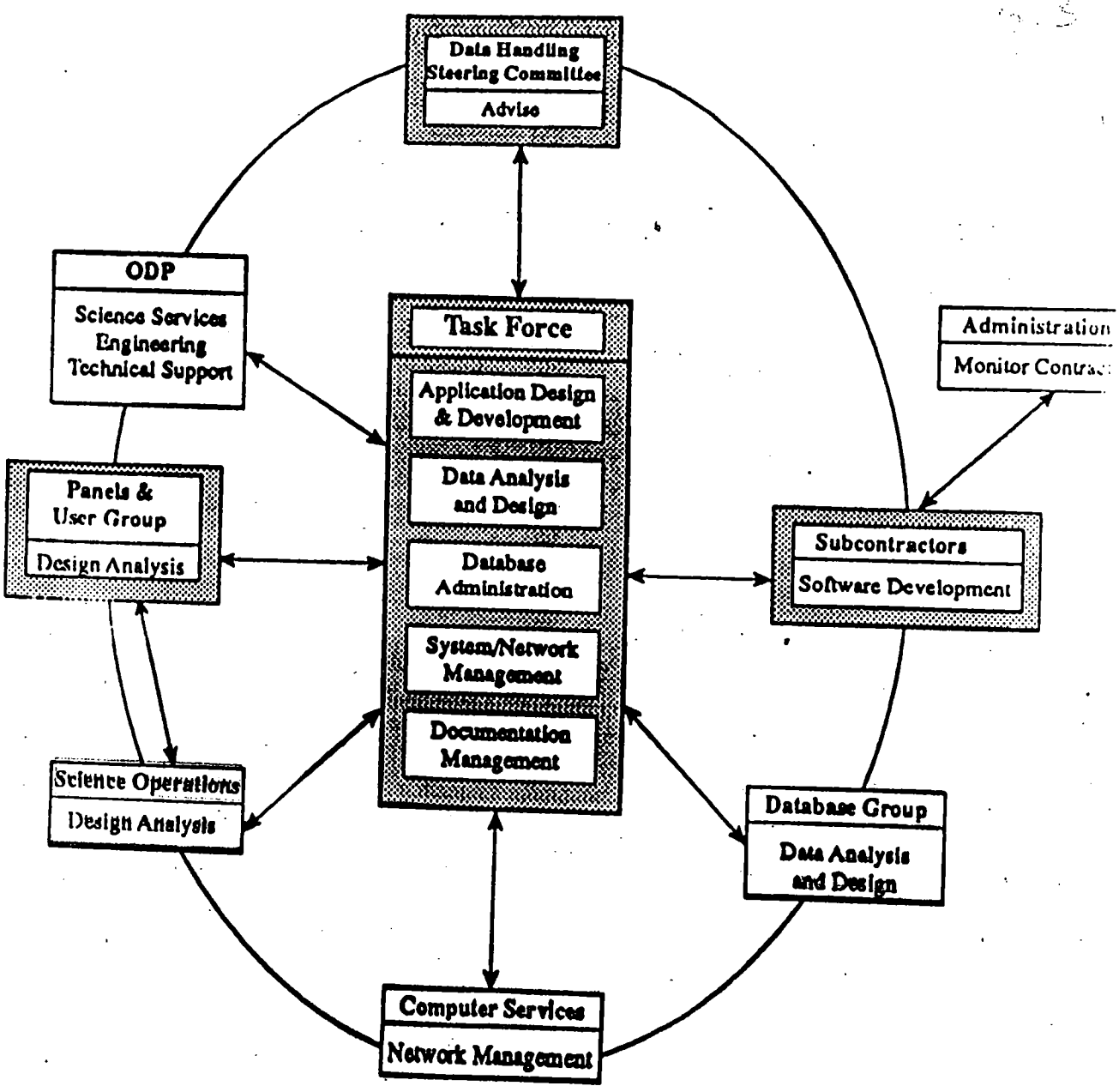
DRILL-IN BHA/DCB/DCS BITS (APPROX $ 420 K)

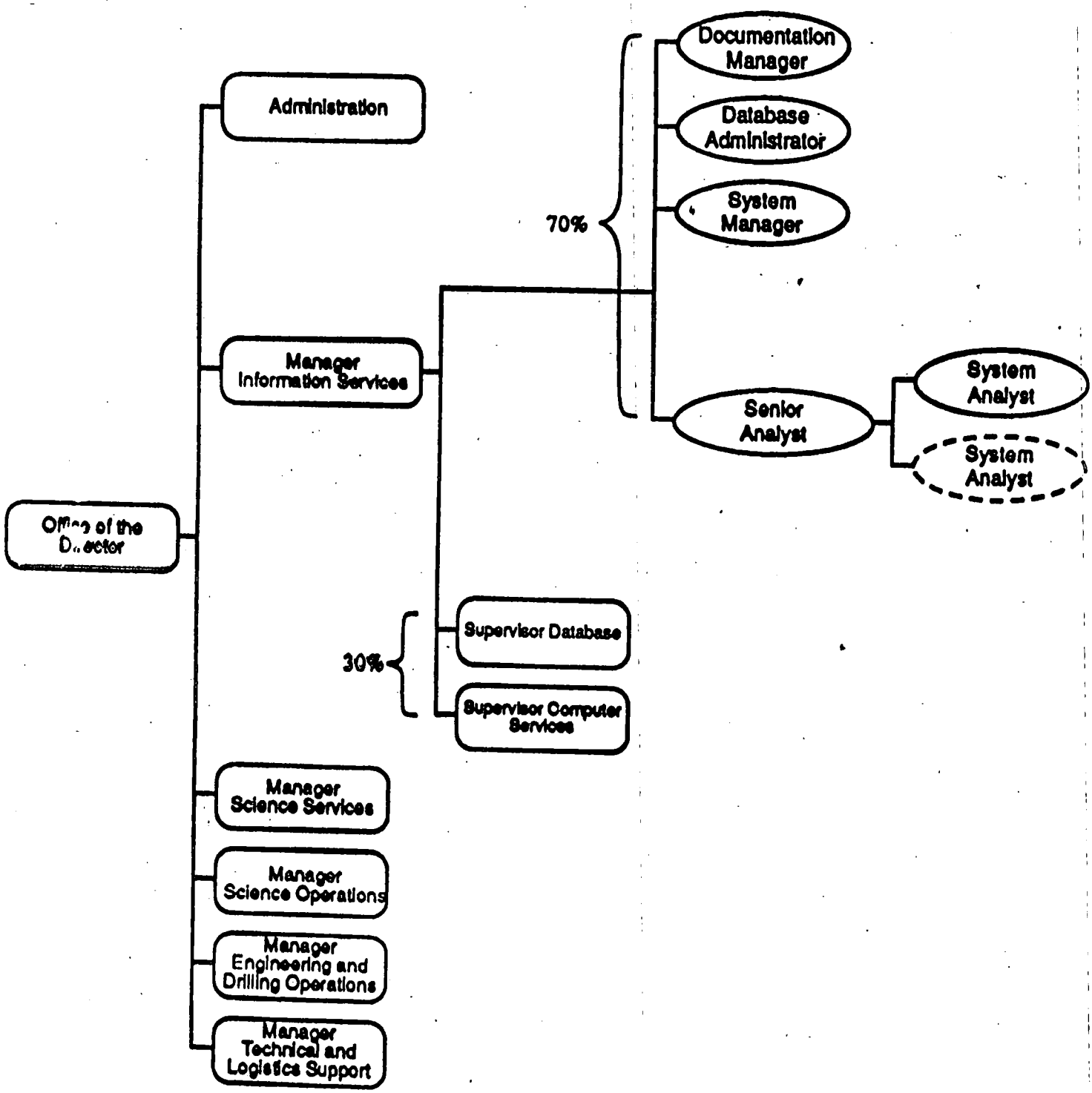
* 12-1/2 AND 7-1/4 TRICONE DRILL BITS
* 12-1/2, 11-5/8, AND 9-7/8 HYBRID TCI ROLLER CONE BITS
* 11-5/8 AND 9-7/8 TCI ROLLER CONE BITS
* 11-1/4 DIAMOND BITS
* 7-1/4 DIAMOND BITS
* 7-1/4 DCB DIAMOND CORE BITS
* 4 CENTER BITS (2-CONE)
* 4 CENTER BITS (1-CONE)
* 7-1/4 CENTER BITS (2-CONE)
* 7-1/4 CENTER BITS (1-CONE)
* 4 AND 7-1/4 PILOTED REAMING BITS
* 3.93 STINGER BITS
* 3.96 DCS IMPREGNATED DIAMOND CORE BITS
* 3.96 DCS SURFACE SET DIAMOND CORE BITS
* 3.96 DCS GEOSET CORE BITS

APPENDIX 6


Total Number of Records in Database per LEG
(includes Paleomag datasets)
Number of Records
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 E124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141
LEG
Total Records = 684,508


DSDP/ODP Database &
Computer Development
Equipment Development
1998
Split Core MST
Datanet
Core-log integration
Natural Gamma
final field tests
initial field tests
1993
ODIN proposal
E-Mail
FMS
Upgrade of network
file servers upgraded
need for improved database
core-core integration
(GRAPE, ms, color)
MST Track
development of IHP
sanctioned softwre
1988
manual (mag. sup)
cryo-mag
Pc's, Macs, VAXes
ODP begins w/ s1032
1983
HP1000 computer
installed on ship
gas chromatograph automated
seismic data collection automated
capture of paleo data from IR's
keyword index (1-44)
1978
microfilm prime data storage
master data tapes for key
datasets
1973
proposed electronic database
paper database
DSDP begins drilling
1968


Data Handling
Steering Committee
Advise
ODP
Science Services
Engineering
Technical Support
Task Force
Application Design
& Development
Data Analysis
and Design
Database
Administration
System/Network
Management
Documentation
Management
Administration
Monitor Contra
Panels &
User Group
Design Analysis
Subcontractors
Software Development
Science Operations
Design Analysis
Database Group
Data Analysis
and Design
Computer Services
Network Management


Office of the Director
Administration
Manager Information Services
70%
Documentation Manager
Database Administrator
System Manager
Senior Analyst
System Analyst
System Analyst
30%
Supervisor Database
Supervisor Computer Services
Manager Science Services
Manager Science Operations
Manager Engineering and Drilling Operations
Manager Technical and Logistics Support

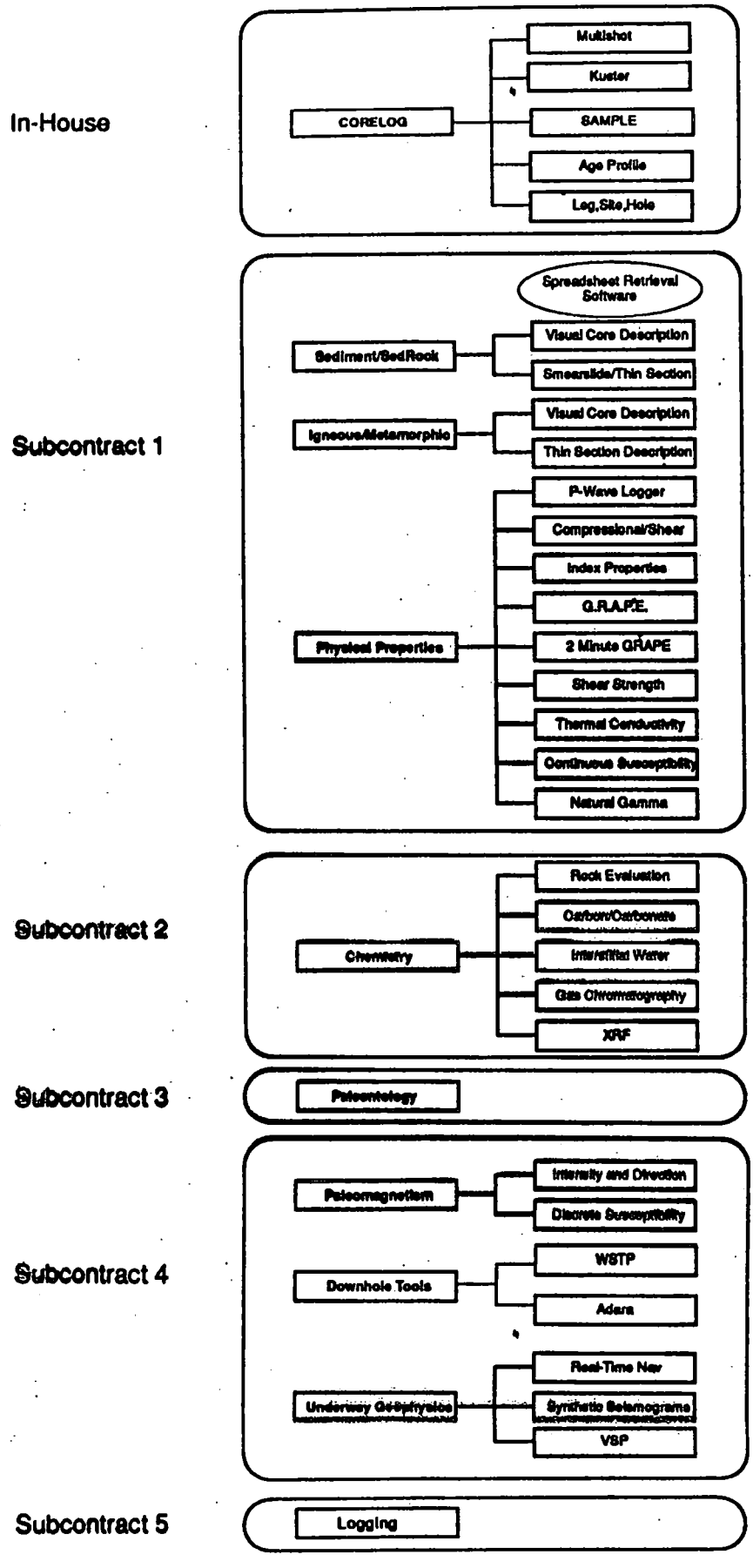


Figure 2: Prioritized IHP Sanctioned Data Types and Proposed Subcontracts

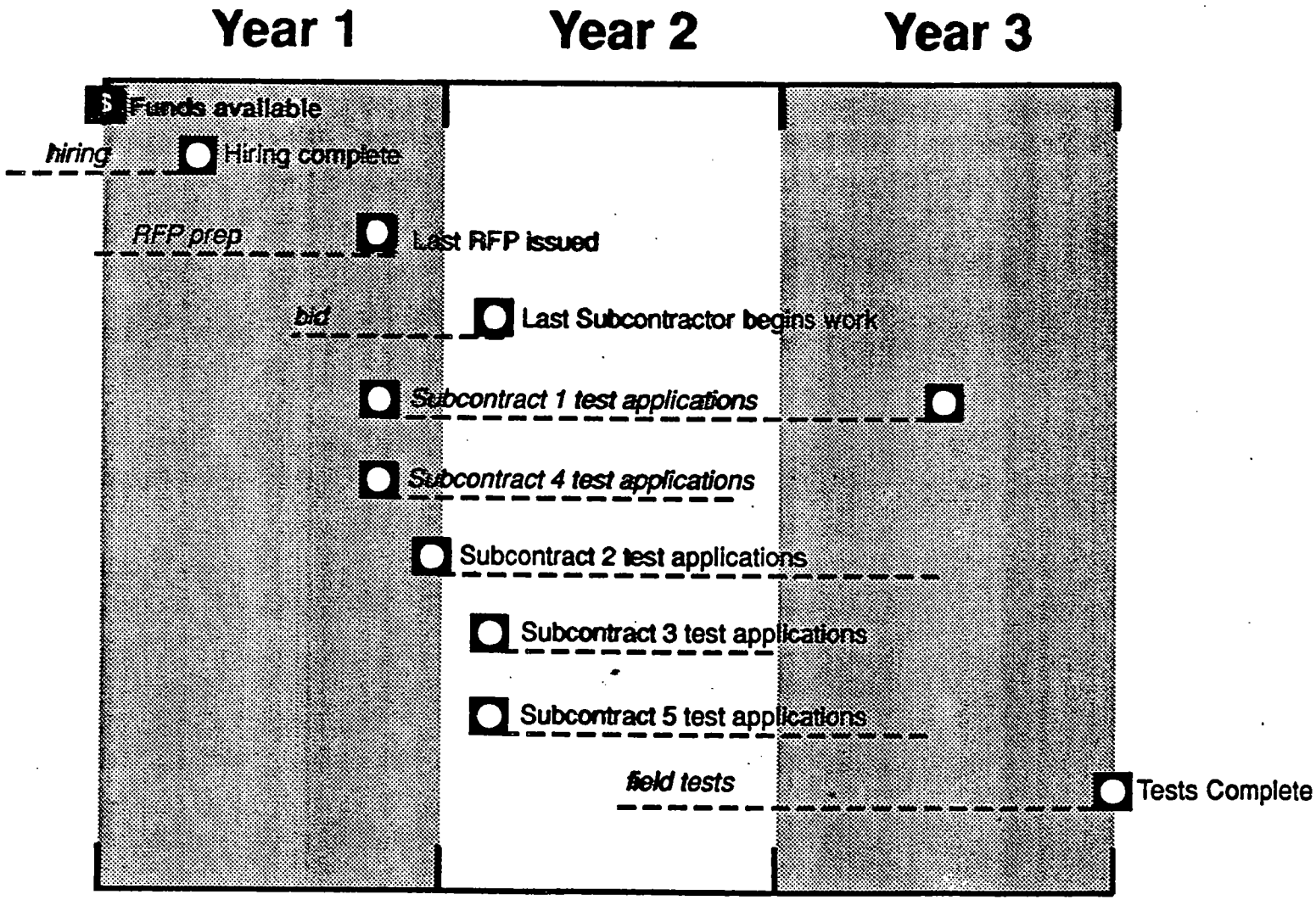


Figure 3: Summary of Project Timelines

Table 1. Project Schedule

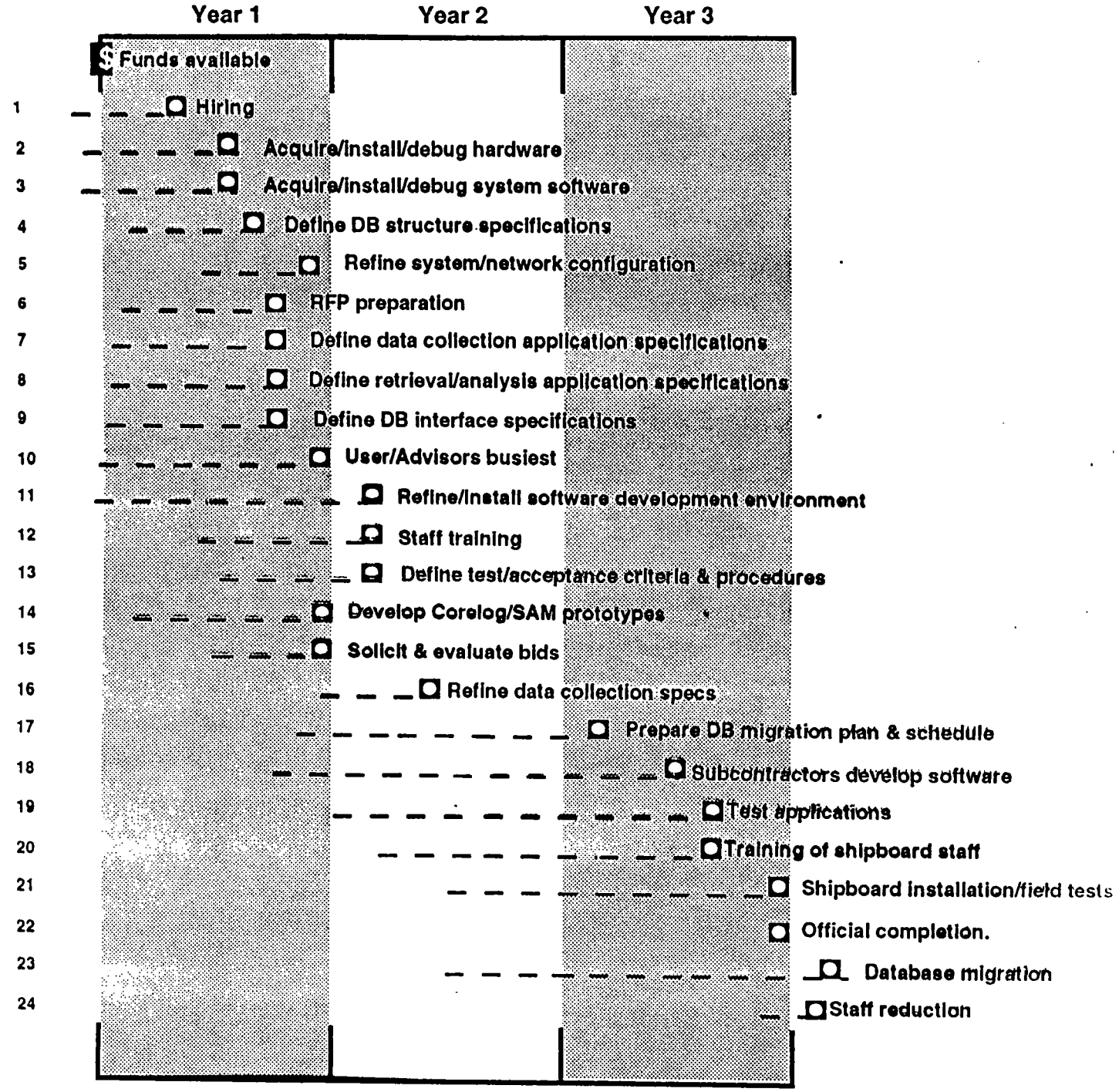


Table 1

Draft Budget for ODIN in thousands of FY92 dollars

	1st Year	2nd Year	3rd Year
Personnel			
Senior System Analyst	65	65	35
System Analyst (2 in 1st year)	110	55	55
System Manager	40	40	20
Database Administrator	40	40	20
Documentation Manager	0	50	50
Staff Scientist	50	50	25
Supplies	5	10	10
Services			
Environmental	36	36	17
Printing, Copying, Postage	15	30	15
Maintenance (hardw, softw)	13	20	20
Shipping	2	5	1
Equipment**			
Ship	117	50	0
Shore	50	0	0
Software			
Ship	0	21	0
Shore	86	0	0
Communications			
Network -- electronic mail	7	7	7
Telephone	10	20	12
Ship/Shore	0	0	20
Training	30	5	5
Travel			
Exploratory	4	0	0
Subcontract-related	10	28	5
Relocation	10	0	0
Subcontracts**			
Applications	85	230	195
Subcontract Overhead** (rate = 50%)	42.5	115	97.5
Annual Totals	827.5	877	609.5

**Estimates subject to modification during the bidding process

1) The following tools are deployed on the 471:

1 Slimhole Digital BHTV (Karlsrhue subcontract)	STATUS: Possible transmission probl
1 Hi-T Digital BHTV (DMT subcontract)	STATUS: Acoustic Transducer proble
1 Analog BHTV	STATUS: Operational
1 L-DGO Ttool #3 (PHASE II)	STATUS: Operational
1 L-DGO Ttool #1 (PHASE I)	STATUS: Operational
1 Slimhole Gamma/Caliper/Temp. tool	STATUS: Operational

2) The following tools are at L-DGO:

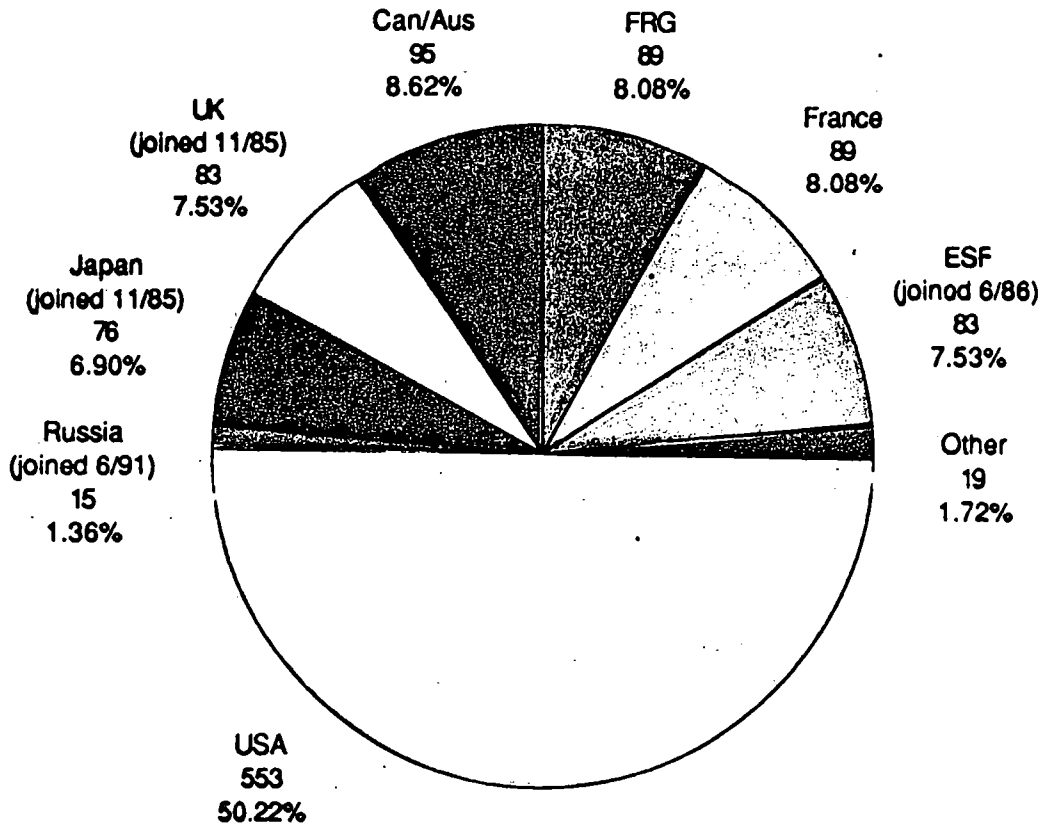
1 Shear Sonic Tool	STATUS: Development
1 MCS-12 Sonic Tool	STATUS: Operational
1 L-DGO Ttool (PHASE I)	STATUS: Upgrade Work
1 3-Axis Mag.	STATUS: Repairable
1 Analog BHTV	STATUS: Operational
Misc. Slimhole tools	STATUS: Various

3) The following are in Development at/for BRG

Shear Sonic Tool	STATUS: Final Stages
Depth Counter	STATUS: Final Stages
L-DGO Ttool #2 (PHASE I)	STATUS: Upgrade to Phase II
Ttool Software (Mac Based)	STATUS: Completed
CSM HI-T Resistivity	STATUS: In Progress
Gable Hi-T Temperature	STATUS: Completed, Waiting Test
Gable Cable	STATUS: Completed, Waiting Test
Software/Surface System for Gable (Mac based)	STATUS: In Progress
Generic Analog Acq. (Mac-Based)	STATUS: In Progress

SHIPBOARD PARTICIPANT TALLY

LEGS 101 - 145



Total: 1101 Participants

Site Survey Data Assessment, SSP, Lamont, Aug. 4-6, 1992

Highly ranked programs considered "drillable" in FY1994 by thematic panels, and which are along the general shiptrack defined by PCOM for FY 1994

Required Data Exist		Some Required Data Do Not Exist			No Proposal
1A	1B	2A	2B	2C	3
In DB 1 Aug. 92 (minor items required)	Major items required in DB by 1 Nov 1992	Surveys to be completed before PCOM Ann. Mtg.	Surveys/process. could be compl. by end of 1993	No survey in place to be compl. by the end of 1993	No evaluation
400----/-Add Costa Rica Acc. Wedge	323-Rev2 Alboran Basin	388----/-Add Ceara Rise	330-Rev Med. Ridge (Phase I)	403-Rev2 KT-bound., G/Mex.	Hess Deep II
	346-Rev3 E eq. Atl. Transform	405-Rev Amazon Fan	354-Rev/-Add Benguela Current	415-Rev Caribbean KT/paleo.	Sed. Ridges II
	361-Rev2 TAG Hydro. System		376-Rev2 Vema F.Z.	NARM-DPG Vøring/SE. Greenland	
380-Rev3 *(VICAP-) MAP	369-Rev2 MARK Lithosphere		380-Rev3 *VICAP (-MAP)		
	391-Rev Med. Sapropels		386-Rev2 California Margin		
	414-Rev N Barbados Ridge		404---- NW Atl. Sed. Drifts		
	NARM-DPG Newfoundland Basin		406---- N Atl. Climatic Var.		
			NAAG-DPG N Atl.-Arctic gateways		

* Note that site survey assessments for VICAP-part and MAP-part of VICAP-MAP proposal differ

APPENDIX 2