JOIDES PLANNING COMMITTEE SUMMER MEETING
14-16 August, 1990
Scripps Institution of Oceanography
La Jolla, California

MINUTES

Members:

J. Austin - University of Texas at Austin
W. Berggren - Woods Hole Oceanographic Institution (alt. for B. Tucholke)
G. Brass - University of Miami
M. Cita-Sironi - Universita d'Milano, ESF Consortium
D. Cowan - University of Washington
R. Duncan - Oregon State University
J. Francheteau - Université Pierre et Marie Curie, France (alt. for Y. Lancelot)
H. Jenkyns - Oxford University, United Kingdom
M. Langseth - Lamont-Doherty Geological Observatory
M. Leinen - University of Rhode Island
J. Malpas - Memorial University, Canada-Australia Consortium
R. Moberly (Chairman) - University of Hawaii
J. Natland - Scripps Institution of Oceanography
A. Taira - Ocean Research Institute, Japan
U. von Rad - BGR, Federal Republic of Germany
J. Watkins - Texas A&M University

Liaisons:

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

Guests and Observers:

K. Becker - University of Miami
T. Bralower - Florida International University
P. Blum - Future Executive Assistant and Non-US Liaison in JOIDES Office
A. Crawford - Australian ODP Secretariat, University of Tasmania, Australia
B. Harding - ODP-TAMU Engineering
M. Kastner - Scripps Institution of Oceanography
L. Kroenke - Hawaii Institute of Geophysics
A. Meyer - Science Operator (ODP-TAMU)
M. Purdy - Woods Hole Oceanographic Institution
M. Storms - ODP-TAMU Engineering

JOIDES Planning Office:

L. d'Ozouville - Executive Assistant and Non-US Liaison
G. Waggoner - Science Coordinator

Tuesday, 14 August 1990

853 Introduction

PCOM Chairman Ralph Moberly called the 1990 Summer Meeting of the JOIDES Planning Committee to order. Jim Natland welcomed everyone to Scripps Institution of Oceanography. Natland explained logistics including a reception hosted by Scripps and a dinner hosted by JOI and the Drs. Winterer. Introductions were then made around the table. Moberly said that this was the last PCOM meeting for the University of Hawaii JOIDES Office, which will prepare and distribute the Draft Minutes, but the Revised Draft Minutes will be prepared by the UTIG JOIDES Office after 1 October 1990.

854 Minutes of 24-26 April 1990 Spring PCOM Meeting

Moberly called for comments, corrections and approval of the previous minutes. There were no further corrections to the revised draft minutes.

PCOM Motion

PCOM approves the minutes of the 24-26 April 1990 Planning Committee meeting. (Motion Malpas, second Brass)

Vote: for 16; against 0; abstain 0

855 Approval of Agenda

Moberly called for additions or revisions, and then for adoption of the agenda for the meeting. Several minor additions and modifications were requested in the Agenda.

PCOM Motion

PCOM adopts the agenda for the 14-16 August 1990 Planning Committee meeting with amendments. (Motion Brass, second Austin)

Vote: for 16; against 0; abstain 0

856 ODP Reports By Liaisons to PCOM

NSF

B. Malfait reported that the House of Representatives has passed the requested increase of around 14% for the National Science Foundation but there was some shifting of funds between programs. The Senate had not acted on the budget before its summer recess. With the present budget deficit the Gramm-Rudman-Hollings Act would require a 32% cut across the board. This reduction is not the most likely scenario, since it would halt Federal Government operations, but requires Congress to act before 1 October. If there is no Gramm-Rudman-Hollings sequestering of funds, the ODP budget is projected to go up $3M (3% increase). The Geosciences Directorate has a requested 18.1% increase with most of the increase going to the Global Change initiatives. The international-partner contribution level to ODP will be held constant at $2.75M.

NSF ODP Field Programs that are upcoming are: near-bottom refraction of the EPR around 9°N by Purdy (WHOI) and Fryer (Hawaii) on the *Atlantis II*; MCS study of the Antarctic peninsula by Dalziel/Austin/Shipley (UTIG) and Hayes/Mutter (LDGO) scheduled for January/February 1991 on the *Ewing* in a joint project with UK scientists; Deep-tow study of the Kane Transform by Delaney (Washington) and Karson (Duke) scheduled for May 1991 on the *Melville* in a joint project with French scientists. New field programs include: a study of sediment properties and OBS experiments on the Cascadia Margin by Yamamoto (Miami) scheduled for Fall 1990 on the *Wecoma*; SEAMARC study of the Vema Transform by Kastens (LDGO), which is a joint study with France and is pending scheduling; and a multibeam, gravity, and dredging study of the Marquesas by Kruse (Eckerd), McNutt (MIT) and Natland (SIO) scheduled for Fall 1991 on the *Ewing*.

An Index to DSDP volumes is in the final stages of completion and will be published in hard copy with a computer searchable CD-ROM; the distribution will follow existing ODP guidelines. The possibility of Soviet participation is being examined by the US administration with activities to date including: rapid response to the December PCOM motion; initial interagency review of issues; intelligence agencies report; special panel for the science advisor; document on technology transfer concerns; and the final interagency review should be completed shortly. At the ODP Council meeting the following issues were discussed: strong support for Ocean Drilling; planning for renewal seems to be on track; uncertainty in facilities beyond 1998 is a concern.

Discussion

Austin said that a 10-year renewal was the aim announced at EXCOM; is this still the goal? Malfait said that the arguments for a 10-year renewal are there, but the questions about facilities will influence any decisions. Moberly asked how the actual funds for ODP relate to the target figures estimated by EXCOM several years ago to be necessary for technological advancement of the program. Malfait said that the budget is under those figures by approximately $1M.

JOI

T. Pyle discussed the 1991 Program Plan, which has been approved by EXCOM and is under review by NSF. Highlights of the plan include: the SOE target of 4% has been exceeded; and an additional $300K has been approved by NSF for high-temperature logging and sampling tools. Under current events: NSF has contributed $50,526 for the insurance deductible for the logging tool lost on Leg 131; shipboard procedures have been under review in case the USSR becomes a new member of ODP; 2 Soviet scientists with continental and ocean drilling expertise have been invited to attend the Deep Drilling Working Group and TEDCOM meetings; the Long Range Plan will get general distribution in late August but PCOM members can get copies at this

meeting. During a visit to Japan, T. Pyle talked with ORI and JAMSTEC concerning various ODP issues (*e.g.* logging tools, new drill ship). JAMSTEC has expressed an interest in some involvement with ODP. The new drillship will probably be finished around 1998.

Liaisons with the Continental Scientific Drilling Programs (CSDP's) are being pursued, but this is a rather diffuse effort. A review of CSDP technology by Andrews and Pyle will be published in *Scientific Drilling*. Discussions with DOE have begun on common interests. Pyle will present an invited paper at the International Congress on CSDP, which is being held in Regensburg, FRG on 8-11 September. During his visit to Japan, Pyle talked to Japan Petroleum Exploration Company (JAPEX) about technology issues including logging. JAPEX is now interested in letting ODP use its high-temperature logging tools, but they have no water sampling tools and the cost to ODP is not settled.

Liaison efforts with IGBP (PAGES) is advancing. Pyle will attend the IGBP Science Advisory Committee Meeting in Paris on 4-6 September. There has been correspondence with Mosely-Thompson, an author of the US National Academy of Sciences Committee report on Global Change on Earth System History and Modelling, which discussed ODP efforts and problems with coring.

An invitation was sent in May to Zietzschel in Kiel, FRG, asking JGOFS to form a Liaison Group, but there has been no formal response because their Steering Committee will not meet until September.

The Nansen Arctic Drilling Program has nominations for a Liaison Group and waits for PCOM action. JOI is helping to prepare a brochure for NADP.

InterRIDGE had a meeting in Brest in June but no action was taken because the group did not feel empowered to form a Liaison Group.

Efforts to provide high-temperature logging and sampling tools is continuing. A letter was circulated to ODP member countries asking about available tools. There were 7 expressions of interest. Pyle's JAPEX visit also explored ways to obtain these tools. Further evaluation will have to be made with the advice of R. Anderson and P. Worthington about which tools will satisfy ODP requirements.

Miscellaneous other business includes: JOI/USSAC will support the Wireline Reentry development by Spiess (SIO) as a US facility; the Mac version of the DSDP CD-ROM is undergoing testing; there is a special issue of *Scientific Drilling* on ODP; and the ODP film is nearing completion (details in Appendix A).

Discussion

Duncan asked if there was a video camera onboard the *Resolution* for recording exciting moments when they occur. Harding said there is one available on the ship now. Brass said he thought that it would be a good idea to make recordings of all legs, which could later be used to produce visual summaries of the legs. von Rad asked how the ODP film would be distributed to member countries. Pyle said this had to be deferred until the film is completed and the number of copies is known.

Science Operator

Operations

T. Francis, the new Deputy Director, presented the first part of the Science Operators report. Francis and L. Garrison overlapped for part of June and July, which made for an orderly transition. Leg 131 at Nankai had severe operational problems. These included strong currents, which were not fully anticipated by the advisory system, and unstable hole conditions. Ways to avoid problems of bad hole conditions should be explored before similar environments are drilled in the future. The 2-3 knot currents generated strong vibrations of the drill pipe, leading to the unscrewing of logging tool connections, problems with the VIT-frame and SES which require cable outside the pipe, and difficulties in the lowering of casing. Leg 132 will be discussed by M. Storms and J. Natland later in the meeting. Leg 133 had just gotten under way and had not started any drilling. Clearances from Australia were acquired the week before sailing.

The increases in fuel prices did not affect the *Resolution* at the port call in Guam because the price was contracted before the recent increases, but fuel will be a larger drain on the budget in the future and may cost an extra $1M next year. The upturn in offshore drilling may also cause problems for staffing and drilling supplies in the future. SEDCO has said that the increase in the length of drilling legs from 56 to 62 days causes problems for their crews, who effectively work 70 days on and 50 days off. If the crews worked on offshore platforms their work schedule would be 14 days on and 14 days off, making it easier on their families.

Discussion

Natland asked if the hold-up with the clearance from Australia was due to problems with environmentalists. Francis said that a special permit was required for drilling in the marine park. Crawford said that the problem was with the petroleum exploration companies, who felt that they should also be allowed to drill in these areas. It had to be made clear that this drilling is not for petroleum exploration.

Publications and Staffing

A. Meyer reported on the publications schedule and on staffing of legs. During FY90, 20 *Proceedings* volumes will be produced in an effort to catch-up on the publications schedule (Appendix B). By the end of FY90 both parts A and B will have been published through Leg 116 and Part A volumes through Leg 128 (Appendix B) will be published. Legs have been staffed through Leg 135. Leg 136 will be staffed after the plans are finished by PCOM at this meeting. Eastern Equatorial Pacific Neogene has had invitations sent out, but Sedimented Ridges 1 has not yet but will after talking to the international partners at this meeting. Meyer presented a breakdown of US participants that had been requested by Tucholke and Moberly (Appendix B). The overall results have been about 50% of the participants come from JOI institutions and 50% from non-JOI institutions. The number of applicants for a leg are generally lower when legs are put into the schedule relatively late. Also the hard-rock legs that anticipate low recovery have fewer applicants. The number of participants has varied from the low 20s to high 20s, with the highest number on Leg 119 when the picket boat was alongside with extra berths. The Co-Chiefs have generally said that they would prefer to hold down the number of participants, except on high-resolution sampling, paleoceanography legs. Austin asked if non-performance increased with the total number of participants. Meyer said that it varies widely and is more dependent on how active a role the Co-Chiefs take in the post-cruise science.

G. Green, a Co-Chief on Leg 134, has approached T. Canby of the National Geographic Society about putting a photographer and writer aboard the *Resolution* on a short-term basis to highlight the drilling on the Vanuatu Leg. The article that comes out of this would integrate the scientific drilling aspects along with cultural and natural history of the region. National Geographic has expressed a willingness to pursue this article.

Discussion

von Rad expressed a concern that some delay in the publications schedule is the result of reviewers holding-up papers. Cowan said that ODP has been recruiting reviewers in advance of the paper's arrival from the author. Meyer said that the publications department is understaffed but tries to get reviewers lined-up before the papers come into the system.

Wireline Logging Services

R. Anderson presented the Wireline Logging Services report for the Lamont Borehole Research Group. He distributed a handout which presented some of the recent results of logging on Legs 130, 131, and 132. The Formation Micro Scanner (FMS) has been routinely deployed by ODP since Leg 128 in the Japan Sea. The FMS data is very useful for orienting cores and observing fine structures in the borehole. Anderson suggested that it should be an ODP policy to log all holes and not just those deeper than 400 m, since the FMS

provides critical data up to the end of the drillpipe. Post-cruise processing of the gamma ray logs using spectral analysis can identify changes in sedimentation rates and reveal unconformities.

Logging on Leg 130 on the Ontong Java Plateau provided an almost complete set of high-quality logging data. Stylolites, pillow basalts and flows were beautifully imaged by the FMS. Major scientific results included logging of a wide range of sedimentological changes on a number of scales within what had been perceived in the cores as a monotonous column of oozes and chalks. Comparison of over 500 m of repeated interval between two wells only 50 m apart (807A and 807C) shows excellent replication.

Logging on Leg 131 at Nankai encountered many problems. Roughly half of the deep hole was logged through the pipe. The frontal thrust was logged and is easily identified on the logs. Similar hostile logging environments are expected during the Cascadia drilling and need to be addressed. The Lamont temperature tool was successfully run on the bottom of the tool string and provided multiple measurements showing the recovery of the hole temperature profile following drilling.

The modest logging plan on Leg 132 was unsuccessful. Four different attempts were made to lower the slimhole resistivity-caliper tool borrowed from Mark Zoback at Stanford into the 70 m hole drilled by the DCS. Only 7 m of open hole were accessed. Bridging and infill in such a narrow diameter hole make logging extremely difficult, even with a 1 and 11/16ths inch tool. Reaming appears to be the only alternative for logging high-temperature DCS holes.

Two wireline packers have been received from TAM International. During testing in the Lamont #2 test well, it was found that the deflation shunt needed to be enlarged to avoid clogging with hole debris. One modified packer was sent out on Leg 131 at Nankai. Two packers will be available on the NE Australia Leg.

Operational versions of LITHP's highest-priority slimhole logging tools (*i.e.* temperature, fluid resistivity, and fluid sampling) can be procured from either JAPEX or Sandia National Laboratories. The BRG will operate and maintain the tools on the *Resolution*. In FY1991 the electrical resistivity and possibly gamma-ray and sonic logging tools will be double dewered (assuming high-temperature crystals and transducers can be acquired). These slim-hole tools will then be evaluated in UNOCAL land wells to test both reliability and accuracy of measurements versus more conventional larger diameter tools.

The BHTV has, with the advent of the wireline heave compensator, acquired excellent data on hard sediment and basement. These data are important for providing delineation of formation contacts, fractures, and intraplate stress directions. The BRG is still negotiating the contract for the lease of these tools from the German WBK. The delay has been the BRG insistence on a paper shipboard copy of the BHTV logs. Leg 134 at Vanuatu will see the first-time

deployment of three new logging tools; the CFA/ELF-developed Nuclear Magnetic Resonance Tool (NMT), the Susceptibility Tool (SUT) from Schlumberger, and the WBK Digital Borehole Televiewer.

In March, Schlumberger introduced their new digital shipboard acquisition and borehole imaging system, the Maxis X-Windows Multitask Acquisition System. The BRG has negotiated the deployment of this system on the *Resolution* at the port call in San Diego next summer.

There have been 13 Logging Schools so far, with one more scheduled for Townsville, Australia this October. The BRG is experimenting with video-taping the Logging Schools. There have been a number of ODP-related logging publications this past year.

Discussion

Langseth asked if there would be "real-time" FMS processing for the Vanuatu Leg. Anderson said that the results will be available relatively quickly but there is still a problem with having sufficient personnel. Duncan asked about the problems with logging on Leg 132. Brass said that the problem was initially caused by a piece of core blocking the bit inside, so the 4-inch pipe had to be pulled. There was also a bridging problem below the pipe.

857 Reports By PCOM Liaisons

EXCOM

Liaison R. Moberly reported on the meeting of the Executive Committee and ODP Council in Washington on 20-22. June. EXCOM and the ODPC discussed the perspective and scheduling for renewal, going country by country much as PCOM did in Paris. In summary little had changed since fall of 1989. Most timing seems about right, even though fiscal years and decision points may vary from country to country. Everyone has some worry about competing programs and global initiatives, but most are optimistic if there is not a major increase in required funds. Reports by JOI, BCOM, PCOM, Wireline Services, and the Science Operator were well received. EXCOM noted "with approval the successful efforts of all concerned in bringing the publication of Initial Reports and Scientific Results on to schedule".

Members of EXCOM and the ODPC were interested in visiting and/or participating in the short leg off Hawaii in late February as well as visiting the *JOIDES Resolution* in port in San Diego in late June; all of which requires a firm schedule well in advance of those times. The 1991 joint EXCOM-ODPC meeting is to coincide with the San Diego port call. PCOM and the Science Operator must set the dates of the Honolulu and San Diego port calls at this PCOM meeting so that EXCOM and ODPC can be informed by 1 September.

SMP

Liaison M. Leinen reported on the 20-21 March 1990 meeting of SMP, the minutes for which were included in the Agenda Book. The decision of SMP

is that no radioactive or enriched-stable isotope reagents be allowed onboard the *Resolution*. After careful consideration, the panel could think of no essential experiments that could only be performed on the ship and recommends the banning of these reagents. The provision for requesting exceptions was to allow some flexibility in case the need for an essential experiment does arise, but the panel was not able to foresee any need. PCOM agreed that the advice of the panel was sound and passed the following motion.

PCOM Motion

PCOM recommends that the use of radioactive or enriched-stable isotope reagents be banned from use onboard the *JOIDES Resolution*. (Motion Leinen, second Brass)

Vote: for 16; against 0; abstain 0

Discussion

von Rad said that he was still concerned that there were no facilities on the *Resolution* for X-ray radiography of whole cores, and this has not been addressed by SMP. Brass said that there was a X-ray machine for small samples but not whole rounds. Leinen said that the panel had not understood that there was a request for an endorsement of this capability. Natland said that he was concerned that the CHN analyzer that used to be on the *Resolution* has been replaced by a Carbon-Nitrogen-Sulfur analyzer, which means that there is no longer a capability to measure H and H_2O in igneous rocks. He suggested that SMP should canvass the community about the desirability of these measurements onboard the ship during the upcoming lithosphere legs at 504B, EPR, and Sedimented Ridges.

PPSP

Liaison R. Moberly reported on the 11-12 June 1990 meeting of PPSP in Reykjavik, Iceland. For Leg 135, Lau Basin-Tonga Arc, three sites were approved, one provisionally approved, and two disapproved; the latter three were to be reconsidered if additional information would be presented at a 9-10 August meeting at College Station. PPSP also discussed the need to include consideration of possible high-temperature hazards in some upcoming legs, and discussed again possible clathrate drilling and shipboard monitoring, the safety of drilling the Northeast Australian Margin, and the Exmouth Plateau post-mortem. With respect to the last topic, PPSP emphasized that all proposed drill sites of all legs will be considered on a case-by-case basis, and that the decision to allow the twinning of an industry site, with hydrocarbon shows, on the Exmouth Plateau, should in no way be construed as setting a direct precedent to be extrapolated to other drilling proposals.

Discussion

T. Crawford had a letter from P. Davies, Co-Chief of the NE Australia Leg, which was in reaction to a comment in the PPSP minutes about presentation of the safety package and concerns for safety at the deep drill site on the axis of the Queensland and Townsville Trough. It was pointed out that the comment was made by only one member of the TAMU Safety Panel whereas the JOIDES panel as a whole had approved the drilling at these sites. The leg is fully endorsed by PPSP and PCOM.

Liaison J. Austin reported on the 9-10 August meeting of PPSP in College Station. The panel did a final review of sites for the Lau Basin that had been disapproved at the Reykjavik meeting. Sites LG-1, LG-2, LG-3 and LG-6 were provisionally approved with modifications in locations and the need to collect data as the ship approaches the sites. During the College Station meeting, PPSP was given an update on the PCS system. A draft of the Hydrocarbon Safety Manual was distributed. The safety and pollution aspects of deep crustal drilling were discussed; steam flash was judged not to be a likely problem. The need for H_2S safety abatement training for SEDCO and ODP personnel was recommended.

T. Francis presented a revised drilling plan that is based on the safety recommendations of PPSP, which require that LG-3 be surveyed by the *Resolution* for approval by the PPSP Chairman, PCOM Chairman, and Science Operator. PCOM considered the revisions which were in the spirit of the original plan of the Lau Working Group and takes the safety considerations into account, and produced the following consensus.

PCOM Consensus

> The order for drilling sites on the Lau Basin Leg (135) will be modified so the order will now be LG-2, LG-7, survey LG-3 for PPSP approval, LG-10, LG-3, LG-6, LG-1, and LG-9.

The Science Operator said that in the 58 days for this leg, only sites through LG-6 will probably get drilled. The other sites will serve as alternates.

DMP

Liaison D. Cowan reported on the 28-29 June 1990 meeting of DMP held at the University of Washington. Cowan discussed DMP recommendations 90/10-90/15. There is a great concern about improving hole stability so that logging can be accomplished in accretionary prisms. The problem should be considered by TEDCOM. JAPEX should be approached about supplying high-temperature logging tools and logging cables (already discussed by T. Pyle). DMP has recommended a suite of logging measurements for the Oahu Pilot Hole, including a test of the borehole seal. A TECP liaison should be appointed to DMP, and liaisons from either the BRG or DMP should go to DPG meetings. Further discussion of some of the items was deferred until the appropriate place later in the agenda.

SSP

Liaison J. Watkins reported on the 12-13 June 1990 meeting of SSP at Lamont. SSP updated its assessment of Pacific programs and organized its future work for Atlantic programs. SSP discussed the potential problems with conflicts of interest since many SSP members have been involved with the preparation of various drilling proposals. The panel felt that as long as the involvement was at "arms length" there should be no problems. SSP discussed and then suggested remedies for the planning process concerning weather- and current-related oceanographic problems at sites. Important specific comments were made about Chile Triple Junction, Cascadia Margins, North Pacific Transect, OSN Pilot Hole, Hess Deep, and Peru Gas Hydrates. The data package for the OSN Pilot Hole is not adequate and will require further SSP and PPSP review. The Hess Deep proposal was discussed and the panel recommended additional work including high-resolution near-bottom studies of rubble zones and additional MCS lines to elucidate structure. SSP does not think that the data will be ready for evaluation before 1992.

Discussion

Natland said that the dive video tapes of the outcrops in the Hess Deep can be used to pick drilling sites. Studies of the rocks are continuing and will allow good sites for the sections to be chosen. Meyer said that SSP did not view Hess Deep worth drilling without understanding the structure. Francheteau said that the MCS lines may not reveal the structure either. Natland agreed that due to topographic complexity the MCS will probably not reveal structure in the ultramafic and gabbroic rocks. Leinen said that the Hess Deep proponents need to respond to these criticisms.

Cascadia DPG

Liaison M. Langseth reported on the 9-11 August 1990 meeting of the Cascadia Detailed Planning Group in highly recommended Quinault, Washington. The DPG has recommended a plan that integrates primary objectives from both the Oregon and Vancouver proposals. The plan is to drill three shallow holes on the Vancouver margin to study variations in porosity and fluid flow in the accretionary prism. The flow at this site is calculated to be a broad diffuse flow ("sweating"), which leads to the formation of the BSR. Drilling is estimated to take 26 days including the suite of downhole measurements. For the Oregon margin, four holes are planned to study the observed more focussed flow through conduits ("peeing"). The first site will be through the primary frontal thrust to study flow from deep in the wedge through fractures. The second hole will be in the backthrust. The third hole will be at an out-of-sequence thrust where the BSR seems to be pulled up at the fault. The fourth hole will be at the landward vergent thrusts which form conduits for fluid flow. This will be a reentry site, cased to 300 m with perforated casing to guarantee success of the packer experiments. A very ambitious program of downhole measurements is planned which will include

Geoprops, LAST, VSP, etc. The sealed cased hole will serve as an ocean bottom observatory. The total time estimate for the leg is 57.7 days including logging but not any transit times.

A second leg is planned to follow 2 years after the first leg. This leg will amplify what was done on the first by recovering instrument packages, re-instrument the holes with new experiments, and additional drilling. The second leg will drill a reference hole outboard of the wedge as well as drill the primary frontal thrust down-dip from the hole drilled on the first leg for tracer studies of the rates of flow.

Discussion

Malpas said that if the second leg is 2 years later, this will put it during the time the ship is in the Atlantic. Langseth said that the DPG felt that this was the most appropriate time for a follow-up leg. Taira asked why two holes were to be drilled in the primary thrust. Langseth said that in part this is to study quantitatively the effects of compaction on porosity. Calibration of the seismic velocity increase due to compaction will help to understand the overall picture revealed by the good seismic coverage.

Taira said that he thought the DPG should have focussed on one set of objectives rather than mixing the two sets of proposal together. He was concern that the plan might be unrealistic about what can be done in the time available. Francheteau also questioned why the two proposals were combined. He thought that both margins deserve to have adequate time to answer the questions. Langseth said that the plan takes the best objectives from both margins so that a first approach is made towards understanding them. The plan proposed will answer some very fundamental questions about fluid flow in these margins.

von Rad suggested that SGPP and TECP should evaluate whether or not this is a reasonable drilling plan for these margins. Brass said that he thought these were two important regional studies to get started. The question about whether or not to study one in more detail should be answered by the thematic panels. Leinen said that the thematic panels should be asked if the compromise plan will lose any important thematic objectives.

Cowan asked how the focussed flow will be examined by drilling. Langseth said that the Geoprops probe, LAST tool, Wireline packer and Straddle packer can all be used to study pressures. Fluid samples can be studied geochemically to identify various processes and sources.

858 Reports By Joint Liaison Groups

FDSN

A. Dziewonski could not attend the PCOM meeting, so M. Purdy (JOIDES co-chairman) presented the plans for the Federation of Digital Seismic Networks (FDSN) as they relate to ODP. Three members of the Liaison Group met at

the Spring AGU meeting in Baltimore and discussed technological issues concerning the Oahu pilot study, including the possible use of the Romanowicz downhole seismometer.

The long-term goal is the placement of 15 to 20 broad-band ocean floor seismographs in ODP boreholes in areas where no land or island broad-band observatory is nearby. The scientific goals of the program are to image the global earth structure better, and to constrain models of oceanic upper mantle dynamics and lithosphere evolution. The resolution of the present global tomography is limited by the seismic station coverage. A better spatial distribution is needed to sample the ray paths from large earthquakes. Oceanic islands are also not ideal stations because they are relatively noisy and have anomalous structure beneath them. Better coverage will also enhance source studies for earthquakes in areas such as California where there is inadequate coverage by ocean island stations.

Several technical issues remain to be worked out. The ability to operate a seismograph downhole for long periods of time has to be demonstrated. Data retrieval options have to be worked out. Possibilities include use of ocean-floor telephone cables, satellite telemetry, and interval recording. The pilot experiments are necessary to test the equipment and make a comparison between ocean-bottom observatories and nearby ocean-island observatories.

The Federation of Digital Seismic Networks at its annual meeting encouraged the efforts to form an Ocean Seismic Network using ODP boreholes by issuing a Statement of Support (Appendix C).

Discussion

Duncan asked about the timing and methods of deployment of the seismometer at the Oahu site. Purdy said that the seismometer will be deployed using the wireline reentry system sometime during the 1992-1993 time frame. No exotic experiments are planned at the time of the drilling of the borehole. Duncan asked what logging would be necessary for the pilot study. Purdy said standard logging and a VSP would be all that is required.

Austin said that the drilling in the Atlantic will provide opportunities to establish some OSN stations, and asked if the Liaison Group will advise on the best placement of holes. Purdy said the plans right now are to piggyback on other efforts when possible. Until the pilot study has been done, the practicality of the ocean floor observatories remains unknown, so it is hard to justify planning holes solely for this purpose. When opportunities arise to argue for leaving cased reentry holes or quickly drilling a hole in an area lacking coverage, this will be done. Brass asked if a list of prioritized locations would be produced, once the concept was proven. Purdy said that in coordination with FDSN the logic of what order to fill in gaps will be developed.

Taira asked about casing of the hole. Purdy said it has to be cased through the sediments to competent basement. Natland asked how deep the hole needed to be drilled. Purdy said that in order to study the propagation periods for long-period waves and noise levels to compare with the seismic station on Oahu, experiments need to be carried out in sediments and basement at various depths.

GSGP

E. Kauffman could not attend the PCOM meeting, so T. Bralower (JOIDES co-chairman) discussed the Liaison Group with the Global Sedimentary Geology Program (GSGP). This liaison group has not yet met together, but plan to get together in late August in Denver at the Cretaceous Resources meeting. The GSGP is an activity of the International Union of Geological Sciences, which has the objectives of: understanding the history of the earth; finding and producing natural resources in sedimentary rocks; and training sedimentary geologists. The International Committee selected Cretaceous Rhythms, Events and Resources (CRER) as the first research project. The objectives of CRER are to: 1) test global synchroneity of various rhythms and events; 2) characterize and explain widely distributed sedimentary deposits; and 3) enhance further discovery and development of resources. There are 5 working groups in CRER: WG1 - Sequence stratigraphy and sealevel change; WG2 - Sedimentation in oxygen-deficient oceans; WG3 - Cyclostratigraphy; WG4 - Cretaceous carbonate platforms; and WG5 - Paleogeography, paleoclimatology, and sediment flux.

One activity for the Liaison Group will be to help strengthen drilling proposals with Cretaceous aspects such as: Atolls and Guyots; Shatsky Rise; NW Africa Transect; Equatorial Atlantic Margins; Argentine Basin; High Latitude Transects; and Somali Basin. There is a concern that there is not a good balance on OHP and SGPP between panel members with research interests in the Mesozoic and those with Neogene interests; this is discouraging proposals for drilling older sequences.

Discussion

Brass said that there also needs to be a stronger voice for the technological advances needed to recover more than 20% of older sections. Leinen said that a broader look than just recovering more samples needs to be taken. Models for the formation of black shales and oxygen-deficient oceans which can be tested by drilling need to be developed; drilling sites for doing these tests need to be identified and the proposals written. Bralower said that some of the proposed margin transects could address these types of problem if they get input from GSGP. Moberly said that carbonate platforms and some other areas which lack proposals could also benefit from GSGP input.

859 Engineering Developments

B. Harding discussed engineering developments at TAMU (Appendix D). The DCS test received most of the efforts over the past months. Harding commented on the following developments: Conical Side Entry Sub (CSES) has been completed and shipped to the vessel for Leg 133; Vibra-Percussive Corer (VPC) has been fabricated and shipped for testing on Leg 133; Motor Driven Core Barrel (MDCB) formerly called the Navidrill Core Barrel (NCB3) has undergone further modifications and will be tested again on Leg 134; Sonic Core Monitor (SCM) is being reconfigured for use with the RCB coring system; this will include hard rock orientation capability with core scribers and a connection to a magnetic multishot camera, and will undergo further testing on Leg 134; APC Breakaway Piston Head (BPH) has been put on hold since development of the VPC may make it superfluous; Pressure Core Sampler (PCS) was modified for use on Leg 131 (Nankai) where it recovered 0.49 m of clay and clathrates near hydrostatic pressure; Drill-In-Casing System (DIC) was successfully used on Leg 131 and will be available again after minor modifications. The reentry cone seal is being developed as a joint project among E. Davis, K. Becker, B. Carson and ODP. ODP Engineering is developing the seal mechanism while Davis develops the data logger, Becker develops the sensor string, and Carson the fluid sampling feed-through. The mechanical seal should be ready for testing at the Oahu pilot hole.

Technical support of third-party developments continues to be a significant role of ODP engineering, these include: 1) Lateral Stress Tool (LAST) being developed by K. Moran; successfully tested using a modified APC at Nankai; 2) Geoprops Probe being developed by Dan Karig; will be tested at ODP in August and later this fall in New Jersey, but will not be deployed before Leg 134 (Vanuatu); 3) ONDO Thermistor String developed by ORI and ODP; deployed in Hole 808E but has not yet had its data recovered.

Discussion

Pyle asked who was in overall charge of the reentry cone seal project. Harding said that the fabrication of the mechanical seal was under the supervision of T. Pettigrew at ODP, and the seal is the part to be tested at the Oahu site. M. Cita asked how much time on Leg 134 will be needed to test the MDCB, SCM and Geoprops. Storms said that these will be tested during normal operations and will require only a few extra hours.

Leg 132

M. Storms discussed the results of the test of the Diamond Coring System (DCS) on Leg 132. The Engineering Leg accomplished a thorough evaluation of the DCS in the bare, fractured rock environment. The system was not evaluated in interbedded chalks and cherts or shallow water atoll and guyot carbonates. Test results for the overall system as well as subsystems are given in Appendix E. On the whole the DCS system has proven itself for

deployment from the *Resolution* and shown the capability to drill and core in fractured rocks. The problems encountered with recovery in some units were the result of the friability of the material and the choice of the core catchers. The mini-hard rock guidebase design proved successful after minor modifications and the "pogo" concept worked very well. No major engineering changes are needed in the DCS at this time, just tweaking of some of the components. Two important unresolved questions for the EPR drilling are bit life and rates of advancement in fractured basalts. There were no problems with hole instability and getting pipe stuck with the system used.

Discussion

M. Cita asked about the core catcher design used for the DCS. Storms said it was a standard off-the-shelf industrial design for hard rocks. Natland said that the core catcher was not the proper design to catch friable material and the problem may have been aggravated by the erosion caused by spray of fluid ahead of the bit.

Langseth asked if the system will be able to drill a 1 km hole in the basalts at the EPR. Storms said that this cannot be answered very well at this time. The platform mounted system is not efficient for deep drilling. The pipe feeding system takes time and to change a bit requires a round-trip of the pipe, which will take between 9 to 12 hours. The present range of the system is about 300-500 mbsf. For more efficient operations, the rigging crew needs to work on the rig floor. Harding said the present DCS configuration is robust enough to do the job. The next major expenditure for the system will be to get it on the rig floor with the tensioners. Brass said that the time for tripping the core barrel using the DCS is as efficient as the conventional system on the *Resolution*. Storms said that guides for estimating drilling times with the DCS are being prepared for the 4500 m configuration.

860 Next Engineering Development Leg

J. Natland and G. Brass in a letter distributed at the meeting suggested that the next test of the DCS be at Loihi Seamount immediately following the drilling of the Oahu Pilot Hole. This drilling would allow more experience to be gained with the system at shallower water depths before undertaking scientific drilling at the deeper EPR axis. The principal engineering objective would be to gain more experience coring in young basalts for better evaluation of bit life, core catchers, and wireline retrieval. The engineers said that the DCS will be ready for further testing by January 1991.

Discussion

Langseth said that at the Paris PCOM meeting, the next Engineering Leg for testing the DCS was deferred because the engineers said there would not be sufficient time to work on the DCS if the next test was in February 1991. Storms said that the prior time estimate was overly conservative since the DCS does not require as much work as anticipated.

Leinen commented that the drilling in the Bonins was supposed to be in young fractured rocks, based on what we thought we knew; how can we be sure that the drilling at Loihi will be the same as the EPR? The best way to evaluate the system for EPR drilling is to go there for the engineering test. Francheteau agreed that the EPR would be a better place for the next test of the DCS; if we say we are not going to go to the EPR until fully prepared, then it will probably never get drilled. Storms said that an engineering leg at the EPR would be advisable before any drilling there, regardless of whether or not there is drilling at Loihi. Austin said that the test should be done where the science has been judged to be of high priority by LITHP, therefore the EPR makes the most sense. Natland said that Loihi was suggested because of its shallow depth, which means that more time can be spent evaluating the coring operations and less time tripping pipe. Watkins said that the drilling at the EPR should begin as soon as possible. Malpas agreed that it was important to begin this drilling as soon as possible.

Malpas said that addition of the Loihi drilling to the schedule will delay other programs, putting the Sedimented Ridges program in a bad weather window, as well as delay the appearance of the *Resolution* in the Atlantic. Moberly said that it is important for the renewal process that ODP show progress is being made towards the technically challenging drilling at ridge crests; a major engineering success is needed before renewal to show that ODP has made a significant advancement over DSDP.

PCOM Motion

The next test of the Diamond Coring System will take place on the next leg at the East Pacific Rise. (Motion Leinen, second Francheteau)
Vote: for 14; against 1; abstain 1

Wednesday, 15 August 1990

861 Adjustments to the FY91 Program Plan

Moberly expressed his concern that additions to the schedule are consuming time originally intended for science legs in the central and eastern Pacific, since PCOM has indicated a time for the *Resolution* to go to the Atlantic. There are several requests for changes or additions to legs already in the schedule which PCOM took under consideration. Adjustments to the Lau Basin Leg were made earlier in the meeting (see Minute 857).

Location of Oahu Pilot Hole

M. Purdy discussed the changes in location suggested for the Oahu Pilot Hole to be drilled on Leg 136. The original site had been proposed for the arch to the northeast of Oahu, based solely on OSN requirements. Sites to the south of Oahu have also been proposed for scientific and logistic reasons. The scientific goals for a site on south of Oahu are the most compelling and fit the OSN requirements as well. Proposed sites in the moat are not tenable due to

great sediment thickness (~1 km) and presence of avalanche debris deposits. OSN prefers that the sediment thickness be around 200-300 meters as on the arch. There is also deep velocity data on the arch which indicates normal crust and upper mantle. Logistic arguments for data telemetry and ship use are not compelling at this stage, since there are no plans to instrument the site permanently and the location of debris flows closer to Oahu is an unknown factor. The size of the equipment package to be deployed will require a large-size research vessel regardless of how close the site is to Oahu.

The proposals to move the site to the arch south of Oahu will bring a greater scientific benefit to ODP. The proposed scientific studies by Garcia, Wilkens, and Keating of windblown ash deposits from the Hawaiian volcanoes, paleomagnetics and physical properties are good science. The southern arch site is at the intersection of two MCS lines, has two-ship Expanding Spread Profiles and Sonobuoy data. The seismic control is very good and the structure is well known. Deep velocity data on the arch indicates normal crust and upper mantle at this location. The top of the basement is at 240 mbsf. In summary, the reasons for choosing this site are: proximity to the Global Seismic Network Station on Oahu; excellent support logistics; 200-300 m of sediments; auxiliary scientific studies; good velocity control, intersecting MCS lines; and the GLORIA data indicates it is clear of debris flows. OSN would be happy to go with the southern arch site.

Discussion

von Rad asked if there would be continuous coring of the sediments. Moberly said that this would depend on whether or not PCOM decides to accept the add-on and provides the extra time required.

Natland asked if the seamounts located near the proposed site would influence the OSN goals. Purdy said that the seismic data indicate that the crust and mantle are normal at this location.

Berggren said that from a paleomagnetic view-point, the southern site makes more sense for drilling.

Test of Borehole Seal at Oahu Pilot Hole

K. Becker discussed the proposed add-on to the Oahu leg for testing the mechanical seal for reentry cones. The ODP Reentry Cone Seal is an integral part of the scientific drilling programs for both Sedimented Ridges and EPR Bare-Rock legs. Becker presented sketches of the seal (Appendix F), which in addition to the mechanical seal will eventually contain a data logger, a sensor string, and a fluid sampling feed-through. It is essential that the mechanical packer and plug latching ring locks be tested in the new style reentry cones prior to deployment on the scientific legs. The test requires the *Resolution* both to place the seal and to remove it. The seal requires a 30,000 pound over-

pull to remove it from the cone, since the latches are designed for 1,000 psi overpressure in the borehole. The test cannot be done on land since it needs to be a hydrostatic test of the seal at ridge-axis depths. The test will require about 40 hours. The plug should not endanger either the hole or the cone since it can be pulled out. The sensors and data loggers can be tested on the seafloor at a later time, but the seal requires testing in a reentry cone at ridge-axis depths.

Discussion

Purdy said that learning how to seal the hole is also of importance to OSN, since long-period noise can result from water flowing in the hole. Purdy asked why the seal is designed for removal only by the *Resolution* rather than by wireline or ROV? Becker said that the seal had to be designed to withstand an overpressure of 1,000 psi in the borehole possible in accretionary prism drilling, but still capable of being pulled out by the *Resolution* if there is a failure of the packers or latch ring to release. In the future, seals to be deployed at sites where no formation overpressures are expected could possibly be modified to require much less pullout force and therefore be removable without the drillship. The plug outlets for wireline or ROV access are for access to fluids and data, not removal of the seal.

Langseth asked what specifically would be tested. Becker said that the mechanics of installation and removal using the hardware plus the actual ability to seal the borehole. Langseth asked how the sealing of the borehole will be tested if there are no sensors installed. Brass suggested that the drill string be latched-in and the hole pressurized with the mud pumps to see if the cased hole holds pressure. Austin said that it is important to have a real test of the ability to seal the borehole; this may take additional time. Harding said that time for a pressure test is included in the 40 hour estimate.

Cowan said that the record of having equipment work the first time it is tried is not good, therefore it is essential to test the seal before the Sedimented Ridges leg. Francheteau agreed that the seal needs to be tested before the science legs, but thought land tests in addition to the sea trials would be appropriate.

Langseth asked if sufficient funds were available and Harding said they were for building the mechanical part of the seal. Leinen asked when the seal will be ready for testing and who was in charge of the project. Harding said that the design will be done at the end of the summer and then bids will be requested for fabrication. Harding said that since four persons were involved with different sources of funding, no one person was in charge. Langseth said that one main person should be in charge of the project. Harding said that Pettigrew is in charge of fabrication.

Time Requirements for Oahu Pilot Hole

PCOM reviewed the DMP recommendations for logging during the Oahu Pilot Hole Leg. These are BHTV, Sonic/Density and VSP (if sonic log poor). Anderson recommended a single logging run with the Quad Combo plus borehole imaging (either BHTV or FMS). Time requirements are about 36 hours for standard logging. The VSP will take another 36 hours. DMP put a higher priority on the Borehole Seal test than the VSP.

Time estimates for the leg were as follows:

8 days	Drilling and Casing
3 days	Sediment Coring
2 days	Logging of Open Hole
2 days	Borehole Seal Test
2 days	Transit to and from Honolulu
17 days total (would mean 3 days added to schedule)	

Discussion

Moberly pointed out that the thematic panels have not had an opportunity to comment on the addition of the Oahu Pilot Hole to the schedule or on the desirability of coring here. These additions directly effect the amount of time that they have available for scientific drilling in the central and eastern Pacific. Malpas said that the addition of 3 days to the Oahu Leg will remove 3 days from the Engineering Leg at 504B as things now stand. More time may need to be added to the 504B Engineering Leg.

Leinen said that the proposed additions will make the Oahu Leg more of an ODP-type leg and produce some immediate science results for ODP plus earn some good will. There are strong argument for the coring, the Borehole Seal test and logging. Brass agreed that the three days should be added.

Purdy asked if the VSP is included in the time estimate. Langseth said that it was not. Austin reminded everyone that DMP endorsed the seal before the VSP, so this means that VSP drops off because of lack of time.

Time Requirements for Engineering Leg at 504B

At the Paris meeting, PCOM accepted the LITHP recommendations for logging, milling operations, and drilling ahead at 504B: after reentry, log temperature, sample fluid, and measure permeability; then mill (and fish or both); if the hole is cleared with time remaining, core ahead. If it becomes obvious that clearing will be unsuccessful in the allotted time, the remaining time should be devoted to as full a logging program as possible. DMP has

made similar recommendations for logging with the exception that they propose a more extensive logging program before casing the hole in place of coring ahead. The Science Operator requests that more time be allowed in order to improve the chances of success for coring ahead at 504B.

Francis reviewed the operations history at 504B. At the end of Leg 111, the bottom of the hole was 5036 m beneath the rig floor and the time for a round trip to change a bit was about 20 hours. Bit life was averaging about 20 hours and the penetration rate was around 2 m/hour. Average recovery had fallen to 15% on Leg 111. Some of the material in the bottom of the hole include a diamond bit, as well as various parts including a steel flapper, a float valve and 42 steel ball-bearings, plus spall from the sides of the borehole. There are equivocal indications of possible problems with wear of the casing.

Francis presented flow-charts diagramming options and time estimates for proceeding at 504B (Appendix G). The most optimistic scenario would require 16 days of operations, and a realistic scenario is 22 days. The present schedule has 15 days of operations on-site at 504B. The Science Operator recommends that at least 3 weeks should be devoted to these operations to maximize the chances for success. The present estimate is that there is a 75% chance of success for getting the hole open by milling operations. If operations proceed smoothly and there is time to drill ahead, a test of tri-cone bits against narrow kerf diamond core bits is planned to see which gives the better penetration and recovery rates. If the casing is bad another short leg may be required. Options depend on the state of the casing, and range from patching (4 days), to setting a protective liner (3 days), to abandoning the hole (Appendix G). If the protective liner is set, then drilling would have to proceed with smaller diameter drilling systems. If the hole must be abandoned, plans have to be made for what to do with the remaining time. It is estimated that around 37 days would be needed to drill a new site without coring. A similar amount of time would be needed to clean and drill ahead at Sites 504A or 504D.

Discussion

Moberly said that this plan differs from what LITHP recommended. LITHP recommended drilling ahead only if time was available after milling. Francis said this plan is not significantly different, only if the extra time is available will the drilling experiments be done and these are important for evaluating how drilling should proceed. Moberly said that LITHP recommended that if it was not possible to clear 504B, then the full suite of logs should be run and the site abandoned. LITHP could not recommend drilling any other sites in this area.

Von Rad asked what was the most likely bit for drilling the 900 m to Layer 3. Harding answered the diamond-type bits. Langseth asked how the diamond bits would work with the present system. Harding said 60 feet of core will be

cut and the whole drill string will be tripped since the wireline system will not work with this system. Langseth asked if this would slow down operations. Harding said that since the bit life is about 20 hours, the drill string would be tripped about this time anyway. Duncan asked what would be done if everything proceeds smoothly and only 16 days are required to prepare for further drilling. Francis said that the extra week will be devoted to coring ahead. Duncan said that this was the LITHP recommendation, so he sees no conflict.

Cita asked what would be done with the remaining time if the crustal drilling program at this site has to be abandoned entirely. Becker suggested that the program of sediment coring for OHP that was not fully accomplished on Leg 111 could be done. Austin suggested that the guidebases be set at the EPR. Brass suggested that the flow-charts diagramming options and time estimates for proceeding at 504B be examined by the thematic panels so they could give their priorities for proceeding along the branches. Moberly said the thematic panels will be asked what to do if time becomes available in this area.

JGOFS Experiments on Eastern Equatorial Pacific Neogene Leg

JOIDES has received a letter from M. Leinen acting on behalf of the Joint Global Ocean Flux Study (JGOFS) requesting that ODP collect a set of measurements and samples as an add-on program while the *Resolution* is on station drilling sites for the Eastern Equatorial Pacific Neogene Transect Leg. The measurements and samples include: meteorology and ship position; CTD; O_2; fluorometry, optics (at least PAR); collected samples for analysis of nutrients (NO_3, NO_2, PO_4, $Si(OH)_4$, and NH_4); POC/PON; and extracted chlorophyll and phaeopigments. The Science Operator has indicated that these measurements should be possible to collect on a non-interfering basis with the drilling operations. The samples will be collected, by hydrocasts, from the upper 200 m of the water column. The Co-Chiefs are willing to consider these experiments. These experiments will not require any additional time be added to the leg. Details about which technician to assign to handle the hydrocasts and samples need to be resolved.

Discussion

Francheteau asked why the drilling vessel was needed. Leinen said that the *Resolution* represents a ship-of-opportunity which will be in an area of interest to JGOFS as well as ODP. The advantage of the *Resolution* over other ships in the area is that it occupies one site over an extended time period. The spacing of sites is also appropriate for the JGOFS needs.

Moberly noted that JGOFS is one of the international programs with which ODP has been seeking to form links. It is appropriate for ODP to accept these experiments since they will not interfere with drilling operations and do not add time to the leg. Austin said that the cruise prospectus should state

specifically that these experiments will be done on a non-interference basis and there may be days or sites when it is not possible to do them.

PCOM Consensus

PCOM recommends the accommodation of the JGOFS request for experiments on a non-interference basis on the Eastern Equatorial Pacific Neogene Transect Leg.

Additions to the FY91 Schedule

PCOM formally accepted the additions to the FY1991 schedule discussed above by passing the following motion.

PCOM Motion

Three days will be added to the operational days for the Oahu Pilot Hole Leg; Six days will be added to the operational days for the Engineering Leg at Site 504B; and whatever port time necessary to accomplish crew changes to accommodate these additions will also be added. (Motion Leinen, second Malpas)

Vote: for 16; against 0; abstain 0

862 Reports from Co-Chief Scientists of Recent Legs

Leg 130 Ontong Java Plateau

Co-Chief Scientist Loren Kroenke presented the results of Leg 130 on the Ontong Java Plateau. The primary objective of the leg was the Neogene depth transect to study paleoceanographic changes. A further objective was sampling of the basement of the plateau for petrological, geochemical and paleomagnetic studies. A total of 16 holes were drilled on the plateau, with a record 4822 m of core recovered. At Sites 803 and 807 at total of 149 m of Aptian to Albian aged basement was recovered. The most complete Neogene section was recovered at Site 806, elsewhere there were large hiatuses in the sections.

Cretaceous/Tertiary boundary sequences were recovered at two of the sites, a clay-rich facies with enough paleontological control for identification at Site 803, and a carbonate-rich facies at Site 807. These sites are in similar paleopositions with a difference in basement elevations of only 140 m. The difference in the K/T boundary facies is possibly related to a steep gradient in the CCD. The controls on sedimentation rates and carbonate contents seems to be paleoceanographic variables and not the time the plateau moved beneath the equator.

The basalts represent multiple submarine flows, with a hiatus at Site 807 between the deeper flows and the upper pillow basalts. Geochemically the

basalts show a hotspot affinity, and are similar to basalts from Malaita and the Nauru Basin.

Leg 131 Nankai

Co-Chief Scientist Asahiko Taira presented the results of the drilling of the Nankai Accretionary Prism on Leg 131. Only one site (808) was occupied on this leg. The site was located in the middle of the Nankai Trough in an area where the turbidite section overlying the hemipelagic section was thinnest and where high heat flow should produce higher rates of diagenesis. The drill site was situated to penetrate through the sediments to the frontal thrust, décollement and then to basement.

Drilling cored sands, frontal thrust breccia, highly deformed sediments, shear banded sediments, thrust faulted sediments, slickensided rocks in the décollement, undeformed hemipelagic sediments, and basement. The décollement zone was penetrated at about 900 m and was characterized by scaly clays about 19 m thick. There were no veins or mineralization found in the décollement zone. The sole of the décollement was characterized by 20 cm of clays below which there was no deformation. Just above the basement acidic tuffs and red clays were found. Core recovery was very good and will allow many studies to be carried out. Problems with hole conditions and vibration of the drill pipe caused by high currents, prevented the extensive program of downhole measurements from being carried out. No lithological differences were found in the hemipelagic sediments above and below the décollement. There are changes in the number of faults/m as well as physical properties at the décollement.

M. Kastner presented some of the results of geochemical studies of pore water squeezed from the sediments. Chlorine was found to increase in abundance to 500 m then to decrease until the décollement is reached where it again increased. Possible sources of the influx are local dehydration reactions of clay minerals or an influx from elsewhere in the wedge. Dehydration could only supply a maximum of 50% of the water needed. The rest comes from lateral fluid flow from some horizon elsewhere in the prism due to dewatering by deformation of the sediments. The flow is diffuse with no channeling evident.

Leg 132 Joint Engineering and Science Leg

Co-Chief Scientist Jim Natland described the scientific results of drilling in the Bonin backarc on Leg 132. The primary drilling site (809) was in an area of volcanic vents and flows in the initial rifting zone of the backarc where the recent volcanism laps onto older volcanic peaks. Initial drilling and coring in the fractured rocks had recovery rates around 60%, until the thin carapace of basalts overlying a second friable unit was penetrated. In the underlying unit there was no recovery, with the exception of a few small grains. This unit

appears to be similar to the "basalt mousse" encountered on Leg 126. The few fragments recovered were of a highly vesicular basalt that had interconnected trains of vesicles with a geopetal-like structures where melt had inflowed to fill the bottom of the vesicle.

A second site on was briefly occupied on Shatsky Rise (Site 810). Initially the *Resolution* surveyed the area searching for thin sediments overlying the Maastrichtian age cherts. Eventually a site was found with 120 m of sediments over the cherts. The sediments were piston cored to the top of the cherts prior to the attempted deployment of the DCS. The faunas found in these sediments indicate mixing of warm and cold water masses. In addition 15-16 ash layers were found in the Pliocene section. The surveys around Shatsky Rise indicate that the top of the seamount could have been at sealevel previously. Problems with equipment and the weather prevented further work at this location.

PCOM applauded Drs. Kroenke, Taira, and Natland for their efforts as Co-Chief Scientists, and thanked them for their presentations.

863 Facilitation of Renewal of ODP

Report of the *Ad hoc* Strategy Committee

J. Austin led the discussion about facilitation of renewal of ODP. He discussed the Minutes of the 29 May meeting in Washington. A salient point was the recommendation to PCOM that the following six themes become a focused approach to future ocean drilling:

- High-resolution Neogene Paleoceanography transects
- Sea-level studies
- Deep-drilling to understand the structure and fluid dynamics of accretionary prisms
- Passive-margin evolution
- Evolution of sedimented and unsedimented ridge crests
- Offset drilling for deep lithosphere objectives.

The list had evolved from a comparison of the objectives of Phase 1 of the Long Range Plan with the highly ranked proposals from any ocean, with some committee adjustments in scope and wording. Presumably the supporters of the chosen programs, realizing the opportunities for more drilling for their proposed science, would provide enthusiasm for renewal that would more-than-offset loss of support from those proponents whose interests would be left out.

In light of the themes listed above (while stressing that they are a flexible framework into which modified or new themes could be incorporated), STRATCOM suggested that since some of the highest-ranked thematic objectives will require many legs, and even a renewed program will nevertheless have only a finite number of total legs, PCOM should select about 5 programs, announce a focus of drilling on those, and restructure its thematic and detailed planning accordingly. To do this PCOM would have to charge the thematic panels to go beyond existing proposals and DPG drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP. The following questions need to be addressed:

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

The November 1990 Annual Meeting was proposed as a time to start this process, after a general discussion within PCOM in August.

The committee also proposed the inclusion in the Long Range Plan brochure of a series of one-page summaries of ODP's existing and newly formed relationships with important global initiatives in the earth sciences. These were to be on global change, technology development, global sedimentary processes, ridge-crest processes, high-latitude drilling, and continental drilling.

Other suggestions were:

- JOI was asked to include a presentation, similar to its one before the National Science Board in March, before EXCOM-ODPC in June.
- JOI was asked to consider augmenting the number of LRP/brochure packets to be published, to allow more mailings.
- NSF was to be asked to approach the Ocean Studies Board of NAS-NRC for a formal review of the LRP (D. Heinrichs was so asked at the EXCOM meeting).
- PCOM is asked to retain STRATCOM as an *ad hoc* executive subcommittee of PCOM

Discussion

Malfait said that NSF will approach the National Academy of Sciences about reviewing the Long Range Plan. Moberly said that the hope is that an early review will help in blunting any criticism that might come at a later time during the formal renewal process.

A long discussion was held on the proposed focussing of ODP. Counter arguments made at the meeting were that many proponents believe that diversity has been an asset of the program, bringing in many scientists outside the oceanographic institutions; the notion that some small group of scientists should decide what will and will not be allowed is contrary to a proposal-driven program where any proposed science, if it is good enough, has a chance for selection; too few of the "global initiatives" could expect ODP support; and confusing signals would be sent during the renewal period if having just produced and endorsed a Long Range Plan we now change its most fundamental aspects to a different plan.

The result of these discussions was that ODP will stick with the Long Range Plan. Nevertheless, great concern remains among most PCOM members that the objectives and phasing of the Plan may not succeed unless the advisory structure considers carefully how to carry it out. This motion followed:

PCOM Motion

In order to develop an implementation plan for the Long Range Plan, PCOM charges the thematic panels to:

1) Identify the appropriate way to integrate existing individual proposals into the larger thematic programs identified by their global prioritization and by the Long Range Plan;
2) Plan to obtain proposals for themes or theme elements that are not presently represented;
3) Integrate interdisciplinary interests into the program effectively; and
4) Determine whether it is necessary to identify coordinators or proponents for the theme program.

(Motion Leinen, second Brass)
Vote: for 13; against 0; abstain 3

Thematic panels should begin to answer this charge at their next meeting.

Because of its successes and its potential for further success relative to the exceptionally important matter of program renewal, PCOM asked the *ad hoc* strategic planning committee to continue its efforts.

PCOM Motion

STRATCOM will have another meeting to address the best ways to present the recent accomplishments and advances of ODP; and to illustrate the promise of the program over the next ten years, with the objective of enhancing the chances of renewal. (Motion Langseth, second Malpas)
Vote: for 16; against 0; abstain 0

Members of the *Ad Hoc* Strategy Committee are J. Austin (chairman), H. Beiersdorf, M. Leinen, J. Malpas, R. Moberly, and N. Pisias.

Addition of Innovative Science to Legs

The absence of regional panels and the restricted mandates given to detailed planning groups has caused some concern that worthwhile scientific objectives are being missed if those aspects of science are not included in the original proposal being reviewed by a thematic panel or sent to a DPG. Moreover, there may be instances where an objective can be met along the transit between sites or to or from ports. N. Shackleton has suggested that proposals for add-on science opportunities be considered to put more innovation into drilling legs. Examples of "add-ons" of a couple of days to a couple of weeks might be deepening a paleoceanographic hole into basement in an area of abnormal crust; plugging an old re-entry cone en route to a scheduled site; adding a "tectonics" site to a "fluids" leg; or adding an experiment or testing a tool where not in the original scientific proposal. Most PCOM members believe that a mechanism for allowing some last-minute innovation is important for the future success of ODP, but there is a concern that "add-ons" are not being handled evenly.

PCOM asks the panels to help to inform the community that add-ons will be considered. Moreover, panel chairs at the Chairmen's Meeting should discuss the aspects of fairness, lateness, review, etc., and provide recommended guidelines for how PCOM should handle add-ons. Panels should discuss possible add-ons for the FY92 and remaining FY91 programs, so that their chairs will be able to make recommendations to PCOM at the Annual Meeting, after whatever guidelines are established. OHP and SGPP should note this specifically with regard to the proposed Santa Barbara Basin add-on.

Thursday, 16 August 1990

864 Miscellaneous Business

PCOM Watchdogs for Pacific and North Atlantic Proposals

PCOM decided that it was helpful to continue assigning watchdogs to proposals under consideration for drilling. Watchdogs should be prepared to lead discussions about the proposals and help when there are conflicting opinions from panels, but maintain a neutral position acting neither as an advocate or severe critic. The following is a list of watchdog assignments.

Pacific Ocean

B. Tucholke	Atolls and Guyots
Y. Lancelot (alt. J. Watkins)	Bering Sea History
D. Cowan	Cascadia Accretion

J. Austin	Chile Triple Junction
M. Leinen	Eastern Equatorial Pacific Neogene
J. Malpas	EPR Bare Rock Drilling
J. Malpas	Hawaii Flexure
R. Duncan	Hess Deep
J. Malpas	Lower Crust at 504B
K. Becker	Oahu Pilot Hole
Y. Lancelot (alt. J. Watkins)	North Pacific Neogene
A. Taira	Peru Gas Hydrates
M. Langseth	Sedimented Spreading Centers
H. Jenkyns	Shatsky Rise
R. Moberly	Young Hotspots: Loihi

North Atlantic Ocean

D. Cowan	Barbados Accretionary Wedge
J. Austin	Cayman Trough
J. Watkins	Equatorial Atlantic Transform Margins
J. Natland	MARK Area: Long Section of Upper Mantle
M. Cita	Mediterranean Gateways
B. Tucholke	New Jersey Margin Sealevel
U. von Rad	North Atlantic: Non-Volcanic Rifted Margins
R. Duncan	North Atlantic: Volcanic Rifted Margins
M. Leinen	Northernmost Atlantic Paleoceanography: Arctic Gateway
K. Becker	TAG Area High-Temperature Hydrothermalism
J. Natland	Vema FZ: Layer 2/3 Transition
J. Natland	Vema FZ: Layer 3-Mantle Transition
M. Leinen	West Florida Margin Sealevel

The JOIDES Office will send out copies of the proposals to the watchdogs.

Evaluation of ODP Drilling Results in terms of COSOD I Objectives

For their Fall 1988 meeting, EXCOM had been concerned with evaluating the performance and success of ODP in addressing the themes of COSOD I and therefore had asked the JOIDES Office to provide tables of which goals had and had not been achieved. PCOM later asked that these tables be revised with the input of the Co-Chief Scientists of the legs concerned. The JOIDES Office has received responses from 48% of the Co-Chiefs covering 72% of the

Legs through Leg 128, concerning revisions of the tables. The tables have been revised based on these responses and were included in the Agenda Book. There has been a wide range in the degree of detail of the responses and some conflicts between Co-Chiefs in their interpretation of accomplishments. There was no response from Co-Chiefs from Legs 102, 109, 114, 116, 117, 120, 124 and 125.

PCOM remains concerned that the tables still may be incomplete or biased. PCOM asks each thematic panel to consider the COSOD I themes (at least the 12 principal themes) and prepare 1-page summaries of successes for those themes within its area of interest. In addition, the Panel chairs at the Panel Chairmen's Meeting will be asked about their panel's evaluation of the success of ODP in addressing the COSOD I themes. Undoubtedly, at the time for renewal, agencies and review bodies will want to know what was accomplished out of what ODP set out to do.

865 Membership Actions for JOIDES Panels

PCOM emphasized its general concern about ensuring that the JOIDES advisory structure is open to participation by all US Institutions. PCOM has admonished all JOIDES panels to provide at least two nominees to cover each requested appointment and that these nominations should include "new blood"; the two or more nominees may be given in order of priority. PCOM wants to see a balanced mixture of scientists in the advisory structure, including both scientists with experience in the Ocean Drilling Program and those that are new to the program. PCOM will avoid putting more than one person from a single institution on the same panel. PCOM members should also be prepared to nominate candidates to ensure that panels are balanced, regardless of whether or not nominations come from panels. A short description of the expertise of candidates for panel membership should be supplied for PCOM consideration when candidates are nominated. Thematic panels have been asked previously to supply lists of the expertise of existing panel members to be matched against panel mandates and also to indicate any perceived gaps.

In view of the need by the thematic panels for continuity and even distribution of the work load during the proposal review process, the Panel Chairmen will be asked at the Annual Panel Chairmen's Meeting about the best time to rotate panel members (*i.e.* should replacements be made prior to the fall meetings of the thematic panels as has been proposed by one panel chair, or at the beginning of the year as is done currently).

Membership on the various JOIDES panels was reviewed and the following actions were taken.

LITHP S. Humphris has accepted the chairmanship. Replacements for R. Batiza, L. Cathles, and M. Perfit need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting.

OHP Because of heavy commitments this fall, J. Parrish declined the invitation to join OHP at this time but would like to serve in the near future. L. Pratt has accepted an appointment. Replacements for W. Berger and D. Kent need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting. PCOM recommends replacements combining expertise in the Mesozoic be nominated.

SGPP Replacements for P. Froelich, M. Goldhaber, and W. Hay need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting. No actions were taken by PCOM at this meeting on a recent SGPP nomination because only one name was submitted and the appointment could be deferred until the Annual Meeting. It was reported that E. Suess will be stepping down as chairman after the Spring 1991 panel meeting and therefore nominations for a new chair should be made at the fall meeting. Canada-Australia reported that S. Macko has been replaced by R. Hiscott.

TECP Eldridge Moores has accepted the chairmanship of the panel after the Fall 1990 meeting when Ian Dalziel will be stepping down. I. Dalziel will serve on the panel through the Spring 1991 meeting. Replacements for R. Buck, D. Engebretson, and I. Dalziel need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting.

DMP No personnel actions needed. During their joint meeting this fall, DMP and SMP should discuss the problem of liaisons between their panels.

IHP Both P. Fryer and W. Wise have accepted the Co-Chief positions on IHP. The Co-Chief positions will rotate frequently, depending on the rate of publication of the "Scientific Results" volumes.

PPSP No personnel actions requested. ESF has replaced E. Cassano with L. Deluchi.

SMP No changes in panel membership. The panel will continue to request guests to discuss issues. During their joint meeting this fall, DMP and SMP should discuss the issue of liaisons between their panels.

SSP J. Hedberg has not been able to attend any meetings of SSP and has resigned. Nominations for a new oil-industry representative will be sought by USSAC and, if if time allows, the names may be circulated by correspondence within the panel before PCOM selection at the Annual Meeting. Because of maternity, A. Trehu was given a bye and will become a SSP member in the summer of 1991. G. Moore has accepted an appointment.

TEDCOM The addition to TEDCOM of someone with expertise in high-temperature drilling was approved by PCOM and nominations should be discussed by the panel at its fall meeting, for PCOM selection at the Annual Meeting. Chevron has replaced W. Cotten with P. Nicholls.

Annual Panel Chairmen's Meeting R. Kidd is to be asked to chair the Annual Panel Chairmen's Meeting at Kailua-Kona on 27 November 1990. [Kidd has accepted.]

Detailed Planning Groups and Working Groups A North Atlantic Rifted Margins Detailed Planning Group and a Deep Drilling Working Group were established at the Paris PCOM Meeting. PCOM needed to set membership and establish the mandates at this meeting. Plans for a one day meeting of the Deep Drilling WG have been made for 26 September one day prior to the TEDCOM meeting. Various individuals have already been invited to attend the meeting, since preparations had to be made well in advance for some participants. It was the consensus of PCOM that a North Atlantic Arctic Gateway Detailed Planning Group would also be formed and staffed at this meeting. PCOM was also to consider the formation of a Sealevel Working Group. PCOM approved the formation of these groups, made appointments, and set mandates for all four groups, as indicated below.

Deep Drilling Working Group (DDWG)

C. Sparks, Chairman - designate for 26 September 1990 meeting

Core TEDCOM members for 26 September 1990 meeting:

C. Marx (FRG)
K. Millheim (AMOCO)
H. Rischmüller (KTB/FRG)
F. Schuh (Consultant)

Guests and Liaisons for 26 September 1990 meeting

B.N. Khakhaev (USSR)
M. Finkel ? (Sweden)
JAMSTEC ? (Japan)
G. Gamsakhurdia (USSR)
A. Beswick (UK)

J. Mutter (LITHP)
W. Dean (OHP)
J. Austin (PCOM)
J. Malpas (PCOM)
R. Anderson (LDGO Borehole Res.)
T. Brittenham (Consultant)
G. Foss (ODP-TAMU)
T. Francis (ODP-TAMU)
J. Alt (SGPP)
D. Sawyers (TECP)
J. Natland (PCOM)
T. Pyle (JOI)
K. Becker (PCOM)
S. Howard (ODP-TAMU)
R. Lawrence (DOSSEC/TAMU)
D. Reudelhuber (ODP-TAMU)

B. Harding (ODP-TAMU) M. Storms (ODP-TAMU)

The mandate of the Deep Drilling Working Group is to prepare a document that identifies technologies that exist or need to be developed to achieve scientific drilling goals in those areas that require deep penetration (*i.e.* greater than 2 km beneath the seafloor). The working group will evaluate the alternatives they identify in terms of likely costs and suggest long-term strategies for achieving a deep drilling program in the oceanic crust and deep sedimentary sections.

In addition, PCOM sees the working group fulfilling a long-term function in advising ODP on deep scientific drilling, therefore, the group should examine its mandate, suggest changes or additions in membership and nominate a chairman for this longer-term group.

North Atlantic Rifted Margin Detailed Planning Group (NARM-DPG)

H. C. Larsen (Greenland) - chairman designate

G. Boillot (France)

M. Coffin (UTIG)

O. Eldholm (Norway)

J. Hall (Canada/Australia)

K. Hinz (FRG)

D. Hutchinson (USGS-Woods Hole)

K. Miller (Rutgers)

A. Morton (UK)

D. Sawyer (Rice U.)

S.P. Srivastava (Canada/Australia)

B. Tucholke (WHOI)

R.B. Whitmarsh (UK)

The DPG is to examine the various proposals for drilling volcanic and non-volcanic North Atlantic rifted margins and recommend a prioritized plan for a drilling program, specifying the number of legs required to answer fundamental unanswered questions about these margins.

North Atlantic Arctic Gateway Detailed Planning Group (NAAG-DPG)

W. Ruddiman - chairman designate (LDGO)

W. Berggren (WHOI)

R. Heinrich (FRG)

E. Jansen (ESF)

L. Mayer (Canada-Australia)

P.J. Mudie (Canada-Australia)

J. Thiede (FRG)

T. Vorren - alternate chairman designate (Oregon State)

The DPG is to examine the three existing North Atlantic Arctic paleoceanographic gateway drilling proposals and provide a prioritized plan for a drilling program. If the highest priorities cannot be accomplished in one leg, the DPG should make suggestions for additional drilling.

Sealevel Working Group

P. Crevello - chairman designate (Marathon Oil, Littleton, CO)

M. Aubry (France/WHOI)

R. Carter (Canada-Australia)

N. Christie-Blick (LDGO)

P. Davies (Canada-Australia)

A. Droxler (Rice Univ.)

G. Eberli (ESF)

R. Halley (USGS)

T. Loutit - alternate chairman designate (EXXON)

K. Miller (Rutgers)

W. Sager (TAMU)

M. Sarnthein (FRG)

A. Watts (UK)

E. Winterer (Scripps)

The PCOM Liaison will be J. Watkins.

The Working Group is to formulate an approach for a worldwide attack on the problems of sealevel change utilizing the drilling capabilities of the *JOIDES Resolution*. A focussed drilling program should be formulated, specifying the number of legs required to answer fundamental questions about eustatic sealevel change and outlining the areas which will bring the greatest scientific return. A multi-disciplinary approach is recommended which incorporates lithospheric, ocean history, sedimentary, geochemical, and tectonic objectives.

In addition, the group should examine its membership and suggest changes or additions at its first meeting.

Liaisons from Service Panels to DPGs Both DMP and SSP have suggested that they be allowed to send liaisons to meetings of the Detailed Planning Groups to ensure that their concerns are known to the DPG. Having either a DMP liaison or Wireline Logging liaison will help provide realistic logging plans early in the planning process. Having either an SSP liaison or Data Bank liaison will help communicate the coverage of the site survey data base and any deficiencies. Earlier, PCOM had decided that having members from appropriate panels on the DPGs would eliminate the need for liaisons, but this has not occurred in all instances. PCOM agreed that the best way to handle these liaisons requests is on an *ad hoc* basis. If the service panels feel there is a need for a liaison to attend a particular meeting then the chairman of that service panel should make a request to the PCOM chairman.

Liaison Groups The following JOIDES panel members are to be invited to be members of the Joint Liaison Groups with other Global Geoscience Programs.

Liaison Group with the Nansen Arctic Drilling Program

Larry Mayer, Co-Chairman, (Dalhousie Univ.); member of NAAG-DPG

Bill Berggren, Member, (WHOI); member of OHP

PCOM Liaisons to Fall Panel Meetings The following is the list of PCOM Liaisons to upcoming panel meetings.

LITHP - Becker	IHP - Lancelot (alt. Cita)
OHP - Jenkyns	PPSP - Moberly
SGPP - von Rad	SMP - Leinen
TECP - Taira	SSP - Watkins
DMP - Cowan	TEDCOM - Natland

PCOM Motion

PCOM accepts the slate of persons nominated to serve on panels, detailed planning groups, and working groups and approves the mandates for these groups. (Motion Natland, second Malpas)

Vote: for 16; against 0; abstain 0

Co-Chief Scientist Nominations PCOM made recommendations for Co-Chief Scientists. For the Oahu Pilot Hole (Leg 136), A. Dziewonski and one of R. Wilkens, B. Keating or K. Becker were suggested. For the Joint Engineering and Science Leg at 504B (Leg 137), PCOM recommended for the science Co-Chief, K. Becker, R. Stephens, J. Alt, and R. Morin.

866 Future Meeting Schedule

The next meeting will be the 1990 Annual Meeting which will be hosted by the School of Ocean and Earth Science and Technology (SOEST) of the University of Hawaii at the Hotel King Kamehameha on the big island of

Hawaii, on 28 November-1 December 1990, in Kailua-Kona, Hawaii. The PCOM meeting will be preceded by the Panel Chairmen's meeting on Tuesday, 27 November. A field trip prior to the meeting is being planned for 26 and 27 November to study active and recent volcanism in the vicinity of Hilo and older volcanism along the way to Kailua-Kona. Panel chairs might attend the first of the two days of the field trip.

The 1991 Spring PCOM meeting will be hosted by the Graduate School of Oceanography of the University of Rhode Island on 23-25 April 1991, in Narragansett, Rhode Island. The meeting will be held on the Graduate School of Oceanography campus. A tentative field trip is being planned for after the meeting.

The 1991 Summer PCOM meeting will be hosted by the Bundesanstalt für Geowissenschaften und Rohstoffe on 20-22 August 1991, in Hannover, Federal Republic of Germany. There will be a two day field trip on Friday and Saturday after the meeting, to the Harz Mountains which will probably include stops in East Germany. The field trip will cover a large range of topics including sediments, tectonics, and volcanism.

The 1991 Annual Meeting will be hosted by the University of Texas Institute for Geophysics at the Thompson Conference Center on the Austin campus on 4-7 December 1991. The PCOM meeting will be preceded by the Panel Chairmen's meeting on Tuesday, 3 December. There will possibly be a field trip, which might include examination of the Diamond Coring System and other drilling rigs.

The 1992 Spring PCOM meeting will be hosted by Oregon State University in Corvallis on 21-23 April 1992.

867 Conclusion of the Meeting

This was the last meeting for Garry Brass since he was stepping down from PCOM. In recognition of the many contributions of Garry Brass to ODP which have included: helping when PCOM became stuck in the morass; his extensive contributions to the science the program does; and generosity of his time and efforts; the following joint motion was made.

PCOM Motion

A PCOM geochemist named Brass
Talked always of cows eating grass
When LITHP asked for a few
Or even just two
He asked if they'd find any gas

LITHP answered 'What do you mean?'
It's majors and traces we're keen
So Brass voted 'NO!'
It can't be a go
For a hole without gas is obscene.

(Motion Leinen and Malpas, second Everyone Else)
Voted for by acclamation

The Planning Committee thanked Jim and Carole Natland for their efforts arranging the PCOM Meeting and other events. Jerry and Jacqueline Winterer were thanked for hosting the dinner at their home. Thanks were also forwarded to the Director, Dr. Edward Frieman and others at Scripps Institution of Oceanography for their hospitality.

The 1990 PCOM Summer Meeting adjourned at 1:30 PM.

APPENDICES TO 14-16 AUGUST, 1990 LA JOLLA PCOM MINUTES

A Information on the ODP Film

B Items Related to the Science Operator's Report
  Ships Operations Schedule Revised 6 September 1990
  Bar Graph of Proceedings Volumes Produced Each Year (1987-1991)
  List of Proceedings Volumes Produced FY90
  Statistics on US Particpation in ODP Legs

C Statement of Support for OSN from FDSN

D Development Engineering Report

E Leg 132 Engineering Evaluation of Diamond Coring System

F Schematics for ODP Reentry Cone Plug

G Flow Chart Of Options for Engineering Leg at 504B

HANDOUTS DISTRIBUTED AT THE LA JOLLA PCOM MEETING

Letter from J. Natland and G. Brass Proposing a DCS Test at Loihi

NSF Report to the PCOM meeting

Wireline Logging Services Report to PCOM 8/90

Letter from T. Moore to P. Froelich Concerning Proceedings Vol. 114

Letter from R. Merril About Statistics on Usage of Frozen Whole Round Cores for Organic Geochemistry Studies

Letter from S. Hart to R. Coleman about Hsu/Coleman/Moberly/Pyle Correspondence about ODP

Letter from C. Helsley About Science Objectives for Oahu Pilot Hole

JOI/USSAC Workshop Report on "Role of ODP Drilling in the Investigation of Global Changes in Sea Level"

ODP Poster on Scientific Coring Beneath the Sea

ODP FILM

- JOI is co-producing an hour-long film about the Ocean Drilling Program, to be seen on U.S. cable television and marketed internationally.

- The film will focus on Leg 105 (Baffin Bay), relying primarily on footage taken by JOI/USSAC and supplemented with other film and graphics.

- JOI is now in the final stages of script development, and production is scheduled to begin in September.

- JOI's co-producer, Thomas Horton Associates, an award-winning firm in Ventura, California, expects to broadcast the film as part of an existing arrangement with the U.S. Arts and Entertainment Network, but is exploring other broadcast options as well, including the PBS "Nova" series, and the National Geographic television series. Broadcast is expected in early 1991.

- JOI's co-producer will market the film internationally. Arrangements have already been made to provide a shortened version to the French magazine program "Ushuaia" on TF-1.

- JOI has retained control over the film's content, and is working closely with Leg 105 co-chiefs and TAMU to ensure a quality production.

- A shortened (5 to 10 minute) version will be produced for use by the ODP community at conferences, briefings, etc.

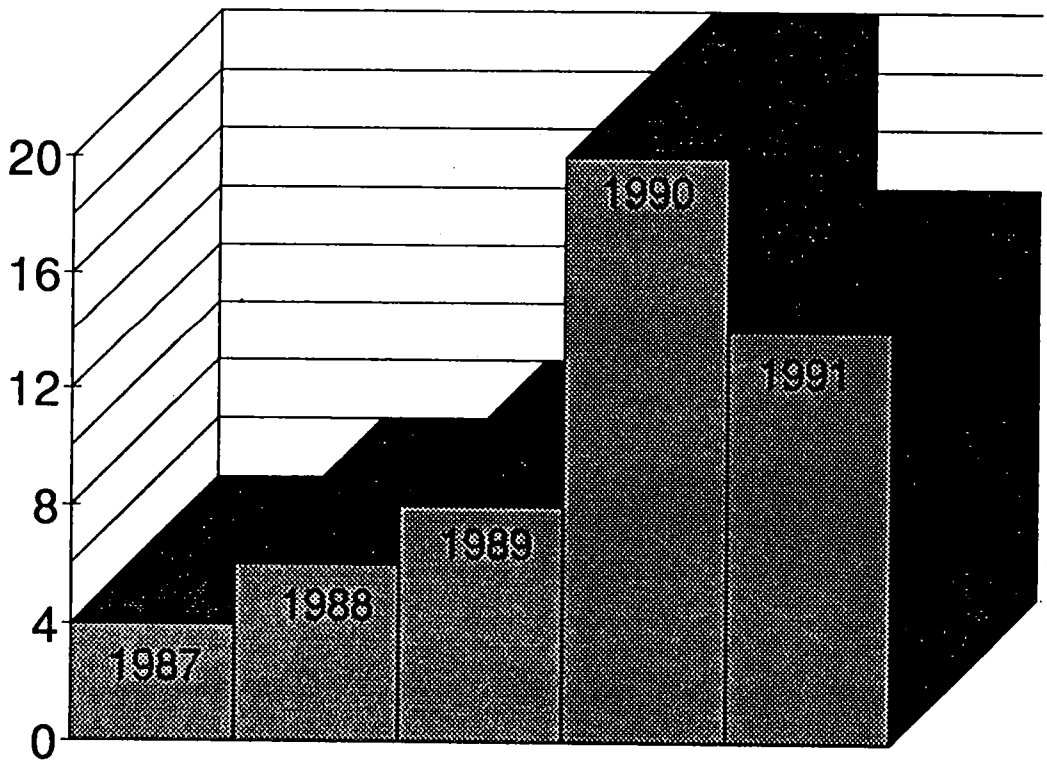
- JOI will have full noncommercial, nonbroadcast rights to all versions of the film, and will make copies available for loan throughout the ODP community and to others who are interested.

ODP OPERATIONS SCHEDULE

Leg	Cruise Dates	Days at Sea	In Port
133 - NE Australia	09 August-11 October 1990	62	Townsville 11-15 Oct 90
134 - Vanuatu	16 October-17 December 1990	62	Suva 17-21 Dec 90
135 - Lau Basin	22 December 1990 - 18 February 1991	58	Suva 18 Feb 91 (Crew Change)
136 Transit	19 February - 1 March 1991	10	Honolulu 1-3 Mar 91
OSN-1	04 March - 21 March 1991	17	Honolulu 21 Mar 91 (Crew Change)
137 Engineering 3A	22 March - 01 May 1991	40	Panama 01-05 May 91
138 E. Equatorial Pacific	06 May - 05 July 1991	60	Los Angeles 05-09 July 91
139 Sedimented Ridges I	10 July - 11 September 1991	63	Victoria 11-15 Sept 91
140 Engineering 3B	16 September - 13 November 1991	58	Panama 13-17 Nov 91

Revised 6 September 1990

Appendix B



Proceedings Volumes Produced Each Year

Proceedings Volumes

(July 23, 1990)

Volumes completed/ at press	Distribution Date	Volumes scheduled for press	Distribution Date
104B	10/30/89	128A	9/30/90
105B	11/6/89		
106/109B	1/26/90		
107B	2/28/90		
108B	12/30/89		
110B	5/14/90		
111B	12/30/89		
112B	6/21/90		
113B	6/28/90		
115B	9/7/90		
116B	9/30/90		
120A	11/30/89		
121A	12/14/89		
122A	1/31/90		
123A	5/31/90		
124A	5/31/90		
125A	7/24/90		
126A	8/3/90		
127A	9/7/90		

24 May 1990

Dr. Ralph Moberly
JOIDES Office
Hawaii Inst. Geophysics
Univ. Hawaii
2525 Correa Road
Honolulu, HAWAII 96822

Dear Ralph:

As promised, here are some statistics on U.S. participation on ODP cruises. The statistics are shown in five graphs (Figures 1-5) and three pie diagrams (Figures 6-8); I can also provide you with the raw numbers if you'd like to see them. Details of how each of these graphs and pie diagrams were constructed are as follows:

Figure 1: This graph shows the total number of applicants for each ODP cruise, ranging from a low of 36 to a high of 100 scientists. These applicants are broken into three categories--applicants for non-JOI U.S. institutions, applicants from JOI U.S. institutions, and foreign (meaning non-U.S.) applicants. Staff Scientists and LDGO/BRG Logging Scientists are not counted in this graph, as they did not "apply" for the cruise in the normal sense of the word. There is obviously quite a bit of variability in the total number of applicants for each cruise. I believe this is partly a function of the cruise's "popularity," but also related to how late in the game the cruise actually made it onto the drilling schedule (e.g., Leg 115 and Leg 129 were scheduled a relatively short time before drilling, and had to be staffed quickly before everyone who might have been interested had heard about the opportunity), and how much core is anticipated (e.g., Legs 106 and 109). I think the lower total number of applicants for Legs 101-103 is probably a function of the fact that these were cruises early in the program when the word about how to participate on board was still getting out to the scientific community.

Figure 2: This graph shows the total number of scientists who participated on each ODP cruise, ranging from a low of 14 (Leg 106) to a high of 30 (Leg 119, which includes the ODP scientists on the Maersk Master iceboat). I've divided these participants into three categories--participants from non-JOI U.S. institutions, participants from JOI U.S. institutions, and a third category which includes all other participants (meaning non-U.S. participants as well as the ODP Staff Scientist and the LDGO/BRG Logging Scientist). My reason for including the Staff Scientist and LDGO/BRG Logging Scientist in the "All Other Participants" category is that, since you started this exercise by asking me to

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)0 Discovery Drive
.ollege Station, Texas 77845 USA
(409) 845-7209
Telex Number: 62760290 ODP TAMU
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compile statistics on the numbers of JOI vs. non-JOI scientists I am inviting to participate on ODP cruises, I felt that to include these two scientists (who are not "invited" in the normal sense of the word) in the "JOI U.S. participant" category would unfairly skew the statistics in that direction. If you feel differently, I can certainly change the graphs. You'll note that the overall number of scientists on each cruise has increased somewhat from the early days of ODP; this is a trend which I am committed to changing in the future, as I think (and recent Co-Chief Scientists agree) that more than the optimal number of scientists have participated on many of the recent cruises.

Figure 3: This graph compares the number of cruise applicants from JOI U.S. institutions (minimum of 4; maximum of 25) to the number of cruise participants from JOI U.S. institutions (minimum of 2; maximum of 10). It gives you a feeling for the "success rate" of applications from U.S. scientists from JOI institutions. Once again, I have not included the ODP Staff Scientist or the LDGO/BRG Logging Scientist as either "applicants" or "participants" on this graph.

Figure 4: Similar to Figure 3, this graph compares the number of cruise applicants from non-JOI U.S. institutions (minimum of 4; maximum of 47) to the number of cruise participants from non-JOI U.S. institutions (minimum of 0; maximum of 10). It gives you a feeling for the "success rate" of applications from U.S. scientists from non-JOI institutions. Note that the vertical scale on this graph is different from that used in Figure 3.

Figure 5: This line graph compares the "success rate" of cruise applicants from JOI U.S. institutions to that of cruise applicants from non-JOI U.S. institutions (i.e., I've computed the percentage of the applicants in each case that ended up participating on the cruise, and have plotted these percentages on a single graph for direct comparison). Once again, I have not included the ODP Staff Scientist or the LDGO/BRG Logging Scientist in these calculations. You'll note that the "success rate" of applications varies considerably (from 0-100%!!)--which is largely a function of the total overall number of applicants; however, the overall success rate is about 30-40%. Also, the "success rate" of JOI U.S. versus non-JOI U.S. varies widely; I think it's appropriate to say that neither JOI nor non-JOI U.S. scientists are getting preferential treatment in the cruise staffing process.

Figure 6: This pie diagram shows the overall distribution of scientific participants on ODP cruises from Leg 101 through 131 (you'll probably recall that I showed this diagram at the last PCOM meeting). The "Other" category includes scientists from non-partner countries that we sailed for purposes of clearance. The "USA" category includes U.S. scientists from both JOI institutions (including the Staff Scientist and the LDGO/BRG Logging Scientist) and non-JOI institutions.

Figure 7: This pie diagram shows the distribution of JOI U.S. versus non-JOI U.S. participants on ODP cruises from Leg 101 through Leg 131, including both the ODP Staff Scientist and the LDGO/BRG Logging Scientist as "JOI U.S. participants". Predictably, this skews the statistics in the direction of having the majority of U.S. participants come from JOI institutions.

Figure 8: This pie diagram shows the distribution of JOI U.S. versus non-JOI U.S. participants on ODP cruises from Leg 101 through Leg 131, without including the ODP Staff Scientist and the LDGO/BRG Logging Scientist (i.e., just including those whom I "invited"). The distribution is about as close to 50:50 as I can get it, which pleases me.

I'll be interested in hearing your thoughts on these statistics, and I'll be happy to provide you with other statistics that you feel would be useful. I'm also providing a copy of this information to Brian Tucholke, USSAC, and JOI--all of whom have expressed interest.

Best wishes,

Audrey

Audrey Meyer
Manager, ODP Science Operations

pc: Brian Tucholke
Ellen Kappel
Members of USSAC
Phil Rabinowitz
Lou Garrison
Rick McPherson
Jack Baldauf

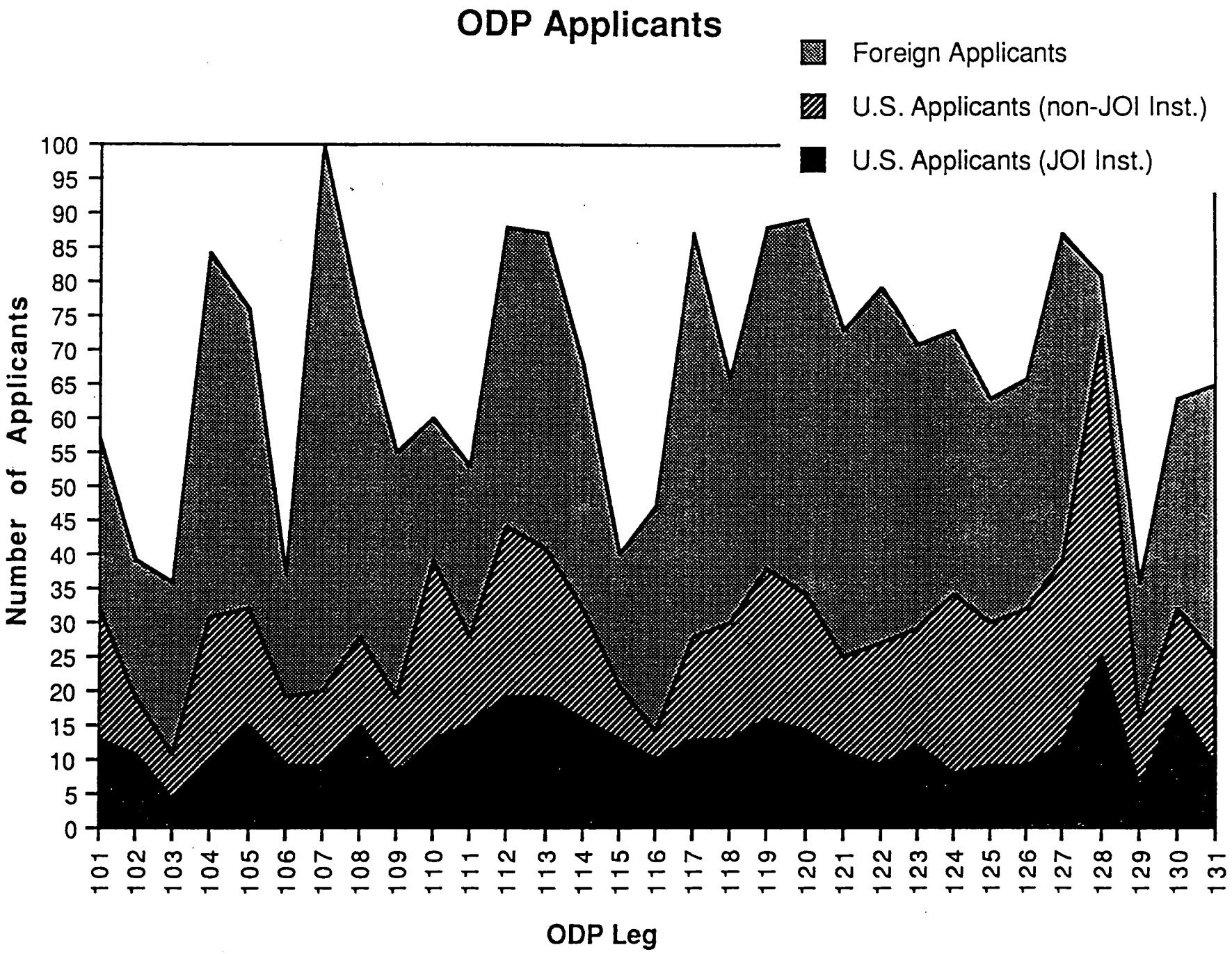
ODP Applicants
Foreign Applicants
U.S. Applicants (non-JOI Inst.)
U.S. Applicants (JOI Inst.)
Number of Applicants
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
ODP Leg

Figure 1

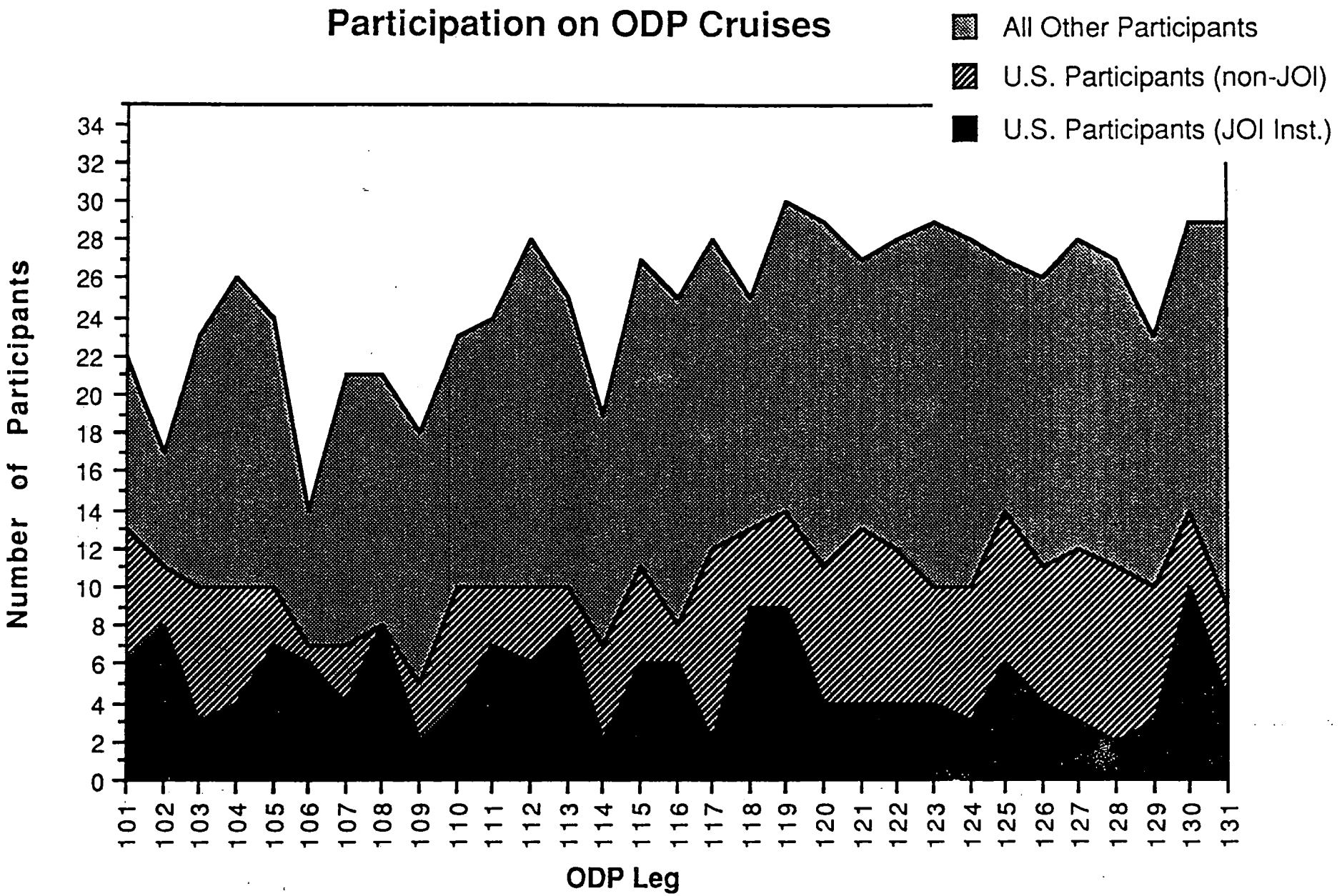
Participation on ODP Cruises
All Other Participants
U.S. Participants (non-JOI)
U.S. Participants (JOI Inst.)
Number of Participants
0
2
4
6
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Figure 2

U.S. Applicants and Participants from JOI Institutions

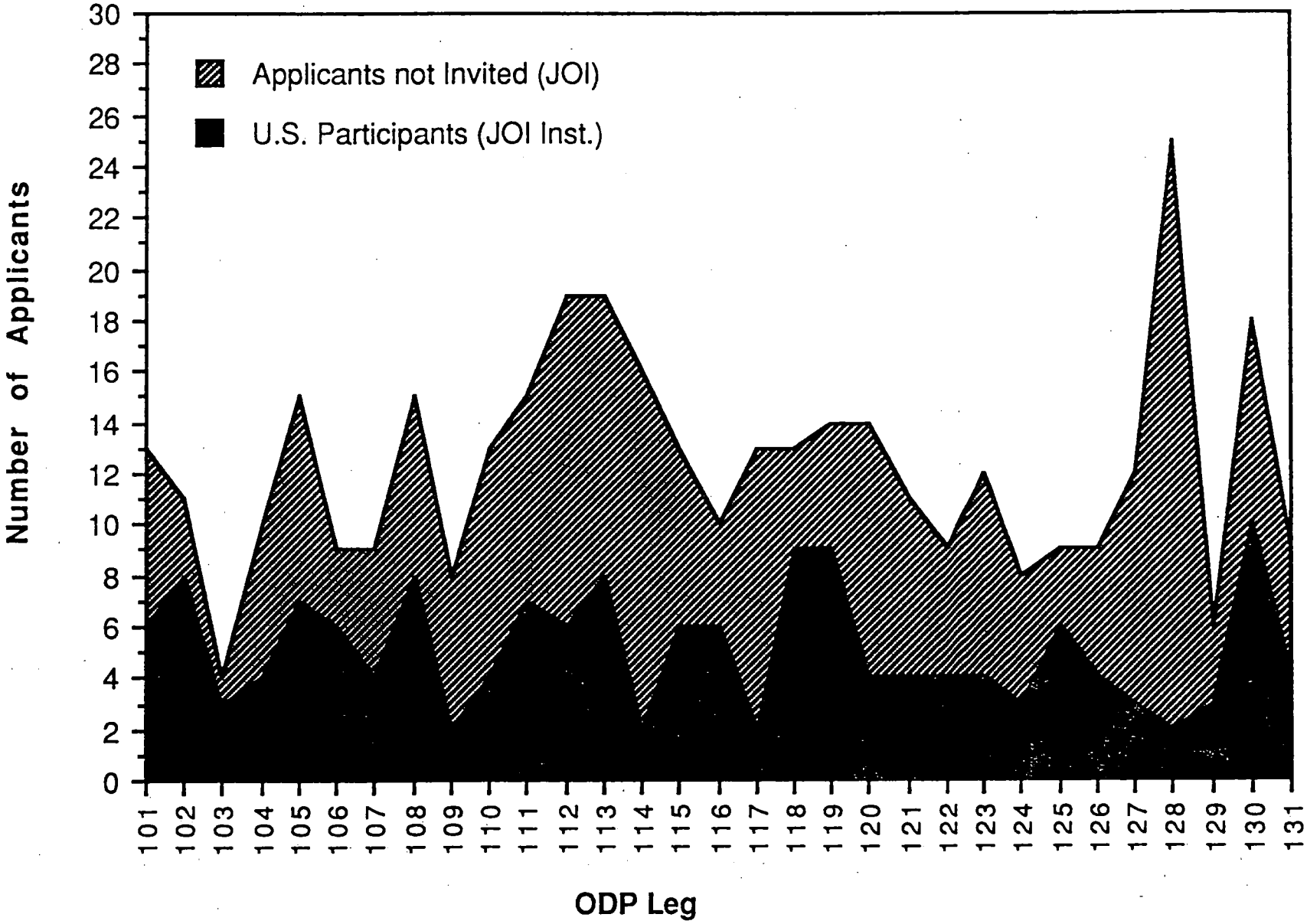


Figure 3

U.S. Applicants and Participants from non-JOI Institutions

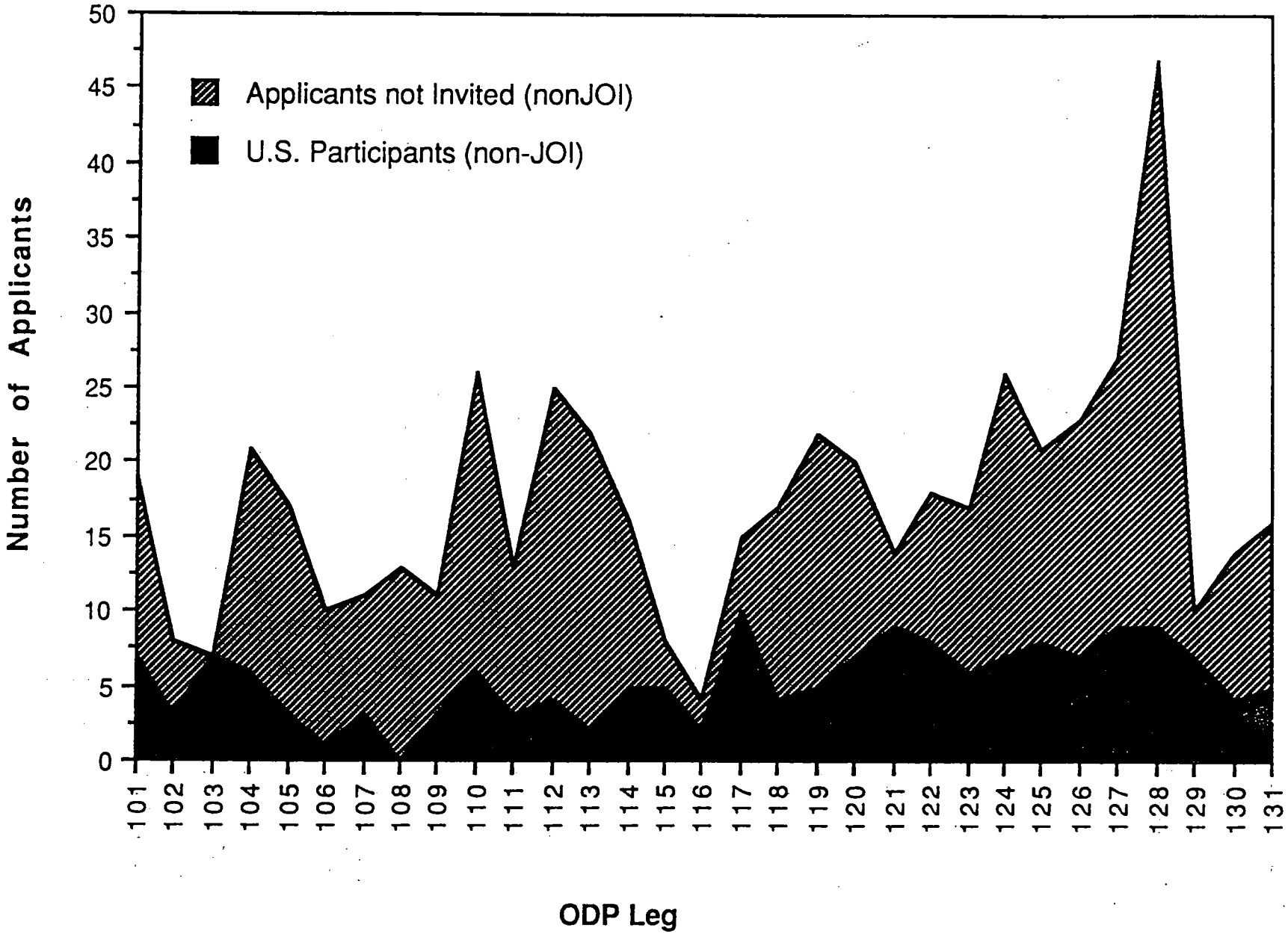


Figure 4

Applicants Invited to Participate (not including ODP Staff Scientists or BRG Logging Scientists)

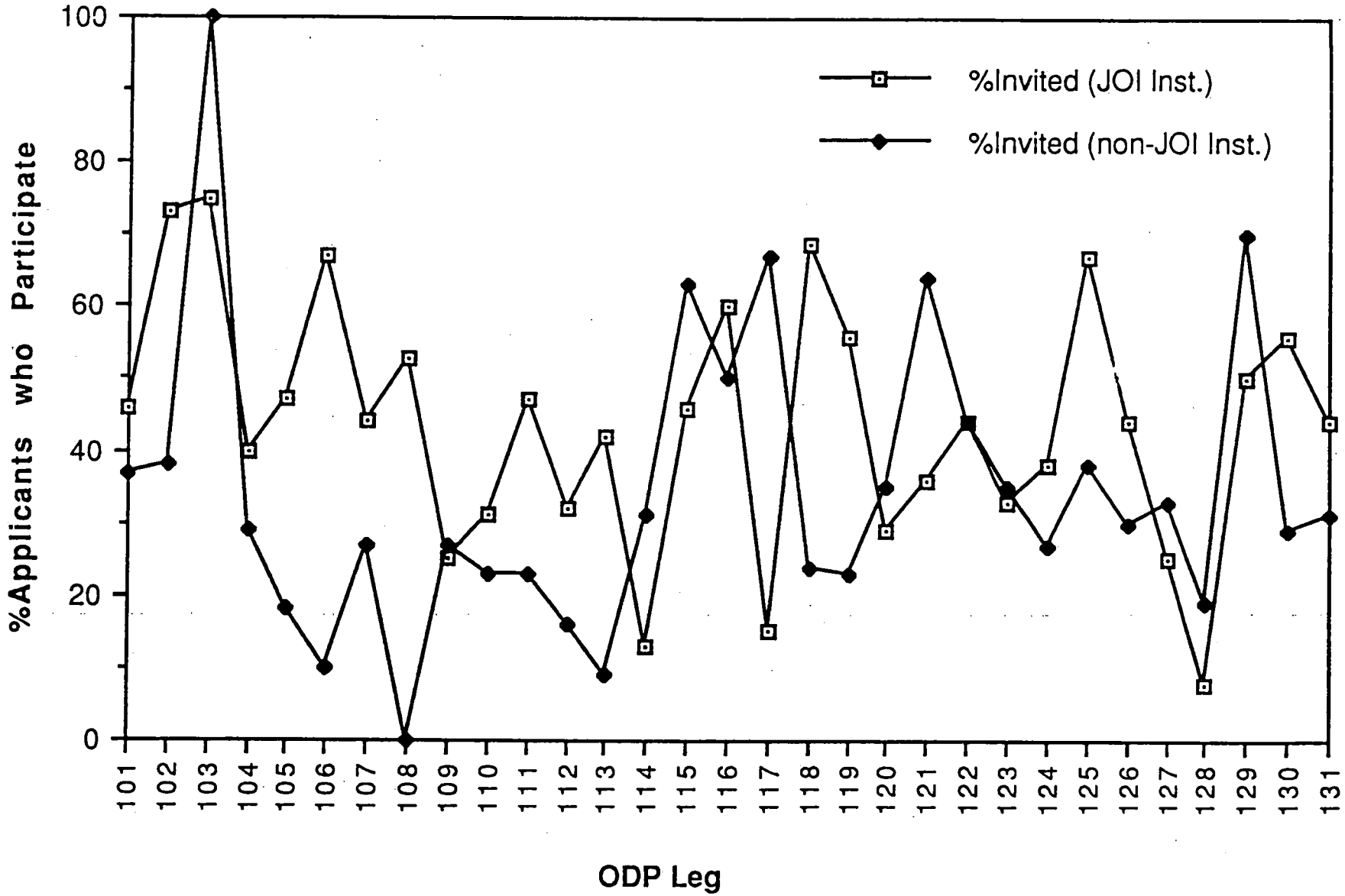
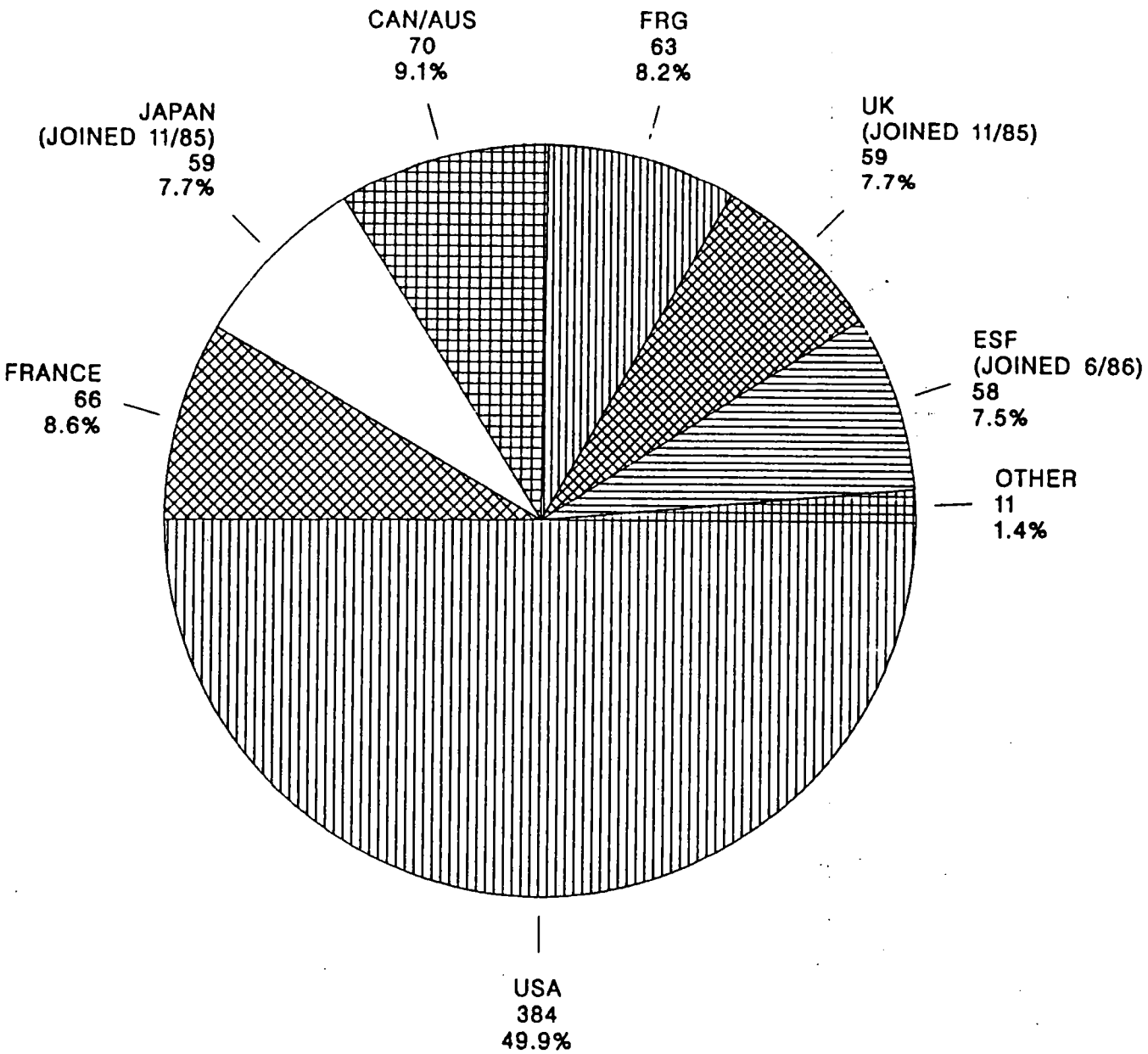


Figure 5

SHIPBOARD PARTICIPANT TALLY
LEGS 101 - 131

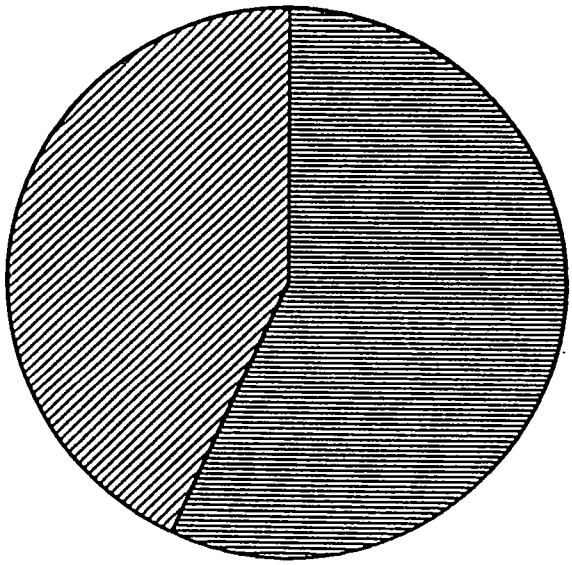
(January 1985 - June 1990)



TOTAL 770 PARTICIPANTS
(Does not include scientists on Leg 124E)

Figure 6

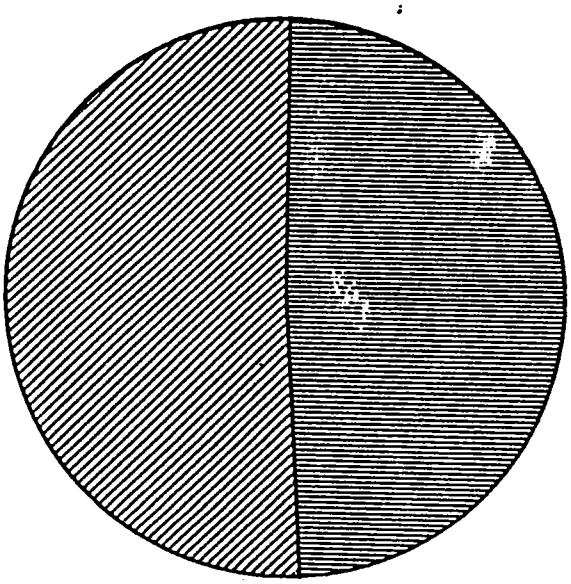
All U.S. Cruise Participants, Legs 101-131, from JOI and non-JOI Institutions



JOI (218 participants)
nonJOI (167 participants)

Figure 7

U.S. Cruise Participants, Legs 101-131 from JOI and non-JOI Institutions (not including ODP Staff Scis, BRG Loggers)



JOI (158 participants)
nonJOI (165 participants)

Figure 8

Appendix C

STATEMENT OF SUPPORT

A primary objective of the Federation of Digital Broadband Seismographic Networks (FDSN) is the development of a global network of very broadband, high dynamic range, digital seismographic stations having similar system response. Through the activities of Federation member institutions, it is clear that the seismological community is now realizing a land-based network of broadband stations distributed about the Earth which should be completed in the early 1990's. The distribution, of course, is not and will not be ideal. In particular, the majority of stations are necessarily on the continents, leaving the oceans, a significant proportion of the Earth's surface, unmonitored. Maps of digital broadband station distribution over major oceanic areas, show that the station deployment on oceanic islands and along oceanic margins is nearly physically maximized. Where islands are abundant, a good density of stations can be achieved, and where they are not, there are obviously large gaps in coverage. Clearly, a uniform global coverage, which is essential for many scientific objectives, cannot be achieved without the installation of permanent ocean-bottom systems with broadband characteristics.

Efforts to deploy broadband downhole seismometers in the deep ocean are certainly needed and would obviously complement a similar effort by the Federation to deploy land-based instrumentation. Thus, in spite of the engineering challenges associated with the emplacement of instruments on the ocean floor, the Federation strongly endorses current plans to develop an Ocean Seismic Network (OSN). In particular, the Federation supports plans of the Steering Committee for the OSN to conduct pilot experiments in a drill hole northeast of Oahu. The Federation also endorses pilot experiments planned by members Japan and France to emplace instruments on the ocean floor. These experiments are essential if we are to make progress on the technical and environmental questions related to the development of a globally distributed OSN over the next decade. The Federation fully supports the deployment of an OSN and will encourage FDSN members to participate in its development.

FEDERATION OF DIGITAL BROADBAND
SEISMOGRAPHIC NETWORKS
Annual Meeting
Golden, Colorado, USA, 2 August 1990

NSF BIMONTHLY REPORT

DEVELOPMENT ENGINEERING

JUNE/JULY 1990

MOTOR DRIVEN CORE BARREL (MDCB)

Stress Engineering Services, the subcontractor for the design phase of the MDCB project, began detailed design work in May under the direction of the ODP engineering staff using the time domain and steady-state computer models created in the analysis phase as guidelines. Their design effort was completed in early July. ODP is currently in the process of producing machine drawings and ordering fabrication of the parts.

A Christensen Mach 1P, 3-3/4" "Drainhole"-type mudmotor has been ordered on a rental-with-option-to-buy basis. Minor modifications to the motor to make it physically compatible with the MDCB components are being done. The computer model analysis of the MDCB concept showed that the Mach 1P motor produces enough torque (69% more than previously available motors of this size) to enable the MDCB to core through highly resistive materials without risking stall even without a high-sensitivity weight-on-bit (WOB) feedback system. For this reason the WOB feedback features designed into the MDCB-134 prototype have been limited. This design philosophy change is intended to help make the MDCB more mechanically reliable since the more sophisticated WOB feedback devices envisioned all required a high degree of mechanical complexity in a confined packaging space.

The schedule for this project, as stated in previous bi-monthly reports, remains in effect. All of the previously stated goals of the MDCB development project (improvements of the NCB2 predecessor) are the same: elimination of intolerable stall tendencies caused by mudmotor pressure drop acting as variable weight on bit, elimination of lunge upon release at the start of coring, and positive indication of penetration after each run.

Fabrication is slated for August in order to complete the tool in time for shipment to the vessel in September for Leg 134 (Vanuatu, Oct-Dec '90). The accelerated schedule will not allow time for lab testing prior to Leg 134.

SONIC CORE MONITOR (SCM)/ HARD ROCK ORIENTATION (HRO)

All SCM equipment was returned from the vessel in preparation for Phase IIA which is aimed at reconfiguration of the SCM components for use in the RCB coring system. In addition, hard rock orientation capability will be added to the RCB version with core scribers and a connection to a magnetic Multishot camera located in the center

of a non-magnetic drill collar. The RCB/SCM repackaging and HRO design work is now underway and will be completed in early August. The redesigned SCM with hard rock orientation capabilities is scheduled for sea trials on Leg 134 (Vanuatu, Oct-Dec '90).

A new software package is being written for correlating information required to piece together the puzzle of oriented hard rock cores. For any given hard rock core the following information will be input to the computer program: magnetic multishot film image information, drilling penetration rate data, SCM core entry records, and visual description of the scribed core. The software will then calculate the proper insitu depth and azimuth placement of each core piece recovered from a known subbottom cored interval.

Future plans call for a Phase IIB where the magnetic multishot camera will be replaced by an electronic fluxgate magnetometer and drillpipe penetration data will be recorded and transmitted from the developmental Totco drilling recorder system. Further in the future are plans for the development of a system to transmit SCM core entry information to the driller on a real time basis using MWD mud pulse telemetry. This Phase III effort is expected to be ready for field testing sometime in 1991.

CONICAL SIDE ENTRY SUB (CSES)

The new Conical Side Entry Sub was received by ODP-TAMU, inspected, and sent to the vessel for Leg 133. This project is considered complete and will not be updated in future reports.

VIBRA-PERCUSSIVE CORER (VPC)

The modifications required on the prototype VPC unit, identified during trials at the Ingersoll-Rand test facility in Virginia at the end of May, have now been completed, as has fabrication of all outstanding components for the complete VPC system. All work was carried out prior to the freight deadlines for Leg 133 (NE Australia) which will permit initial sea trials of the prototype tool.

Review of the scientific prospectus has identified several suitable test sites and it is anticipated that the first tests and trial deployment will be undertaken at site NEA 13 during Leg 133.

Future possibilities for this tool are the design of an hydraulic vibra-percussive unit small enough to be included in an APC core barrel so that normal piston coring would be automatically enhanced by vibration-percussion whenever incomplete stroke was caused by the presence of sands or loose materials. Use of the current VPC prototype tool will provide the information required to specify the parameters of a unit suitable for combination with the APC.

BREAKAWAY PISTON HEAD (BPH)

After numerous unexplained performance oddities during trials on Leg 130 the Breakaway Piston Head was returned to ODP for further design and analysis. Higher priorities for engineering time have placed this project on hold for the near future. Success with the VPC-133 Vibra-percussive Corer, especially in loose sands and turbidites, may make the Breakaway Piston Head for the APC superfluous. The reporting of this project will be dropped until further developments warrant updates.

REENTRY CONE SEAL PROJECT

The reentry cone seal project is a joint project between Dr. Earl Davis, Geological Survey of Canada, Dr. Keir Becker, University of Miami, Dr. Bobb Carson, Lehigh University and ODP. The project consists of placing a seal in an ODP reentry cone preventing movement of water into or out of the borehole. A sensor package consisting of a string of thermistors, pressure transducers, data logger and hydraulic feed through for borehole fluid sampling will be suspended from the reentry cone seal in the bore hole. The sensor package is being designed to be interrogated and removed by a submersible or ROV vehicle.

A second planning meeting was held 18 July, at ODP to discuss the reentry cone seal concept. ODP engineering is developing the seal mechanism while Dr. Davis is developing the data logger, Dr. Becker is developing the sensor string and Dr. Carson is developing the fluid sampling feed through. Detailing of the reentry cone seal concept has begun by ODP engineering.

Sea trials of the reentry cone seal hardware is scheduled for Leg 136, March, 1991, where a prototype plug will be set to prove out the mechanical aspects of the device. Deployment of the complete reentry cone package for scientific purposes is scheduled for Sedimented Ridge, Leg 138, July/August, 1991.

TAM DRILLING PACKER (TDP)

The TAM Drilling Packer (TDP) was deployed on Leg 131. Two attempts at setting the packer resulted in partial sets. The cause of the incomplete sets was determined to be failure of the go-devil seals. A new go-devil was being used for the first time and the exterior seals did not survive the trip down the drill pipe.

The TDP go-devil seals are being redesigned by ODP engineering. The go-devil will be tripped down the drill pipe to test the seals before deployment of the packer. Experimental testing of the go-devil is scheduled for Leg 136, March 1991. If the seals survive and time is allotted, a full test of the packer will follow.

TAM STRADDLE PACKER (TSP)

A concept has been generated by ODP engineering for a modified setting go-devil for the TAM Straddle Packer (TSP). The new go-devil concept was developed in

anticipation of funding of a proposal to deploy a downhole flow meter with the packer. The proposal is being made by Dr. Keir Becker, University of Miami and Dr. Roger Morin, USGS. The new go-devil will enable the logging cable to be deployed with the packer. After setting the packer, the flow meter will be lowered to various depths in the borehole to record real time flow rates as water is pumped into the borehole.

When the proposal is approved and funded, ODP engineering will detail the go-devil design and begin fabrication. Sea trials of the system could occur as early as Leg 136, March 1991, in Hole 504B.

PRESSURE CORE SAMPLER (PCS)

The Pressure Core Sampler (PCS) was modified for use on Leg 131. An additional sampling port and "harpoon" was added to the tool. The "harpoon" is a removable, internal extension of one of the sampling ports that impales the core as it enters the sample tube. The concept is that fluid and/or gas samples could be taken from the core internally giving a much higher quality sample. The second sampling port allows for injecting fluid or gas as samples are removed via the first sampling port. The injected fluid or gas would be used to drive the trapped fluid/gas from the PCS as well as maintain near in situ pressure.

The PCS was deployed twice during Leg 131. The first deployment of the PCS was in Hole 808F at a depth of 4753 m (55 mbsf) into a sand laden formation. The presence of loose particles resulted in the tool being "sanded up", jamming many of the moving parts and failing to function properly. The second deployment was in Hole 808G at a depth of 4881 m (196.5 mbsf). Recovery consisted of 0.49 m of core at near full hydrostatic pressure. The pressurized sample chamber was removed from the PCS and placed in cold storage to lower the temperature to near in situ. When the sample chamber was opened, only about 300 psi remained of the trapped pressure. Although only one of a redundant pair of PCS sample chamber seals was found damaged, it was thought to have been the source of the leak. The core tube was quickly removed from the PCS. The core sample appeared to consist of clay and clathrates. To prevent core disturbance from extrusion, the core tube was cut into 8 inch long sections and placed in liquid nitrogen. Since only one core tube existed for the PCS Phase I prototype, it could not be deployed again. Dr. Miriam Kastner, Scripps Inst. of Oceanography, transported the frozen samples to Scripps for shore based studies.

At the present time, the PCS Phase I prototype tool is stored aboard the JOIDES Resolution. As soon as replacement parts for those parts damaged on Leg 131 are fabricated, the PCS will be ready for deployment. No active development work is being carried out on the Phase II PCS design at this time.

DRILL-IN CASING SYSTEM (DIC)

The fist successful ODP deployment of the Drill-In Casing system (DIC) occurred during Leg 131. Approximately 83 m of 11- 3/4" casing were drilled-in using the DIC to span the borehole from 19 to 105 mbsf in Hole 808C. The DIC deployment was an

effort to "shore up" the sands in the upper portion of the hole. The DIC proved to be a big success allowing Hole 808C to be cored through the decollement and into basement to a TD of 1327 mbsf. Some minor modifications are planned for the DIC after which it will be made available again for operational use.

3RD PARTY TECHNICAL SUPPORT

GEOPROPS PROBE (Karig)

Preparations are underway to test the Geoprops Probe, being developed by Dr. Dan Karig, Cornell University, at ODP in mid August. A special test fixture is being assembled. The testing effort is being coordinated between Dr. Karig, TAM International, developer of the tool, and ODP. Testing at ODP test facility is scheduled for the last week in August. Inquiries are now being made into the possibility of full scale land testing in one of several boreholes to be drilled this Fall in New Jersey under the auspices of Lamont Doherty.

LATERAL STRESS TOOL - LAST 1 (Moran)

A special modified APC was used during Leg 131 to deploy the Lateral Stress Tool (LAST 1) being developed by Kate Moran, Geological Survey of Canada. The modified APC functioned properly and after some initial software and hardware adjustments, the LAST 1 tool was able to gather some data. ODP has not yet received any reports describing the scientific validity of the data taken.

ONDO THERMISTOR STRING (Japan, ORI)

A joint effort between Japanese scientists from ORI and ODP resulted in a 540 m long thermistor string called ONDO, being placed in Hole 808E. The acronym ONDO stands for ODP Nankai Downhole Observatory. Hole 808E was specifically drilled and cased for the ONDO experiment. A special landing sub was made up in the 11 3/4" casing allowing the ONDO tool to be "landed" in the sub. Hole 808E was drilled during Leg 131 and an unsuccessful attempt was made at deploying the ONDO tool. The ONDO tool was successfully deployed at the beginning of the engineering leg, Leg 132. The ONDO tool will be interrogated acoustically from other scientific vessels over the 3 - 5 year life of the project.

LEG 132
PRIMARY (GENERAL) ENGINEERING GOALS

1. EVALUATE DCS PHASE II (4500-M) PERFORMANCE/EFFICIENCY:

*	1000-3000 M WATER DEPTH	DONE: ENG-5
*	BARE/FRACTURED CRYSTALLINE ROCK	DONE: ENG-5
*	INTERBEDDED CHALK/CHERT SEQUENCES	NOT DONE
*	ATOLL/GUYOT CARBONATES	NOT DONE

2. DEPLOY/TEST NEW 'MINI' HRB CONCEPT:

*	EFFICIENT DEPLOYMENT OF HRB	DONE: ENG-5
*	BARE ROCK SPUDDING WITH PDCM	DONE: ENG-5
*	TORQUE LOCKING OF PDCM	DONE: ENG-6

BONUS

*	DEMONSTRATED 'POGO' HRB	DONE: ENG-5
*	DEMONSTRATED RECOVERABLE HRB	DONE: ENG-5
*	SMALL DIAMETER REENTRY	DONE: ENG-5

3. DEPLOY/TEST MOD REENTRY CONE W/DP RISER TENSIONING:

*	DEPLOYED MODIFIED REENTRY-CONE	DONE: ENG-6
*	DEPLOYED DI-BHA THRU MOD RE-CONE	DONE: ENG-6
*	TENSIONED DP RISER W/MOD RE-CONE	NOT DONE
*	CONDUCTED DCS CORING OPS THRU RC	NOT DONE

4. EVALUATE UNSTABLE HOLE OPERATING HARDWARE/TECHNIQUES:

*	DI-BHA SYSTEM DEMONSTRATED	DONE: ENG-5/6
*	CONTINUOUS MUD CIRCULATION	DONE: ENG-5
*	EFFECT OF SLIMHOLE ON STABILITY	DONE: ENG-5
*	STABLE HIGH RPM TUBING ROTATION	DONE: ENG-5
*	EFFECT OF FRICTION REDUCER VERIF.	DONE: ENG-5

5. EVALUATE HRB/MOD RE-CONE W/DP TENSIONING SYSTEM:

*	VALID W/BOTH HRB AND RE-CONE	DONE: ENG-5/6
*	USED IN WATER DEPTHS: 1882 METERS	DONE: ENG-5

LEG 132
SPECIFIC ENGINEERING GOALS

DIAMOND CORING SYSTEM PHASE II 4500 M CAPABILITY

1.	CONTINUE DCS EVAL IN OFFSHORE ENVIRONMENT	DONE: ENG-5/6
2.	OPERATE/EVAL UPGRADED HQ-3 C'BBL SYSTEM	DONE: ENG-5/6
3.	TEST HVY DUTY, SELF WINDING, WL WINCH	DONE: ENG-5/6
4.	EVAL UPGRADED DUAL CYL 2ND HC SYSTEM	DONE: ENG-5/6
5.	EVALUATE SAFER/IMPROVED DCS PLATFORM	DONE: ENG-5/6
6.	EVAL ELEC TD SYS W/HIGHER LOAD/TORQUE CAP	DONE: ENG-5/6
7.	EVAL S-130 TBG AT VARIED RPM/WATER DEPTHS AND EFFECT OF FRICTION REDUCER IN ANNULUS	DONE: ENG-5/6
8.	EVAL NEW UMBILICAL DESIGN F/DCS PLATFORM	DONE: ENG-5/6
9.	EVALUATE NEW UPGRADED DCS MUD PUMP SYSTEM	DONE: ENG-5/6
10.	EVALUATE DI-BHA TCI BIT/CTR BIT & LATCH	DONE: ENG-5

LEG 132
SPECIFIC ENGINEERING GOALS

'MINI' HARD ROCK GUIDE BASE/UPPER HOLE STABILIZATION

1.	TEST REENTRY CONE/HRB GIMBAL CONCEPT	DONE: ENG-5/6
2.	EVAL BALLASTING CONCEPTS F/RISER TENSION	DONE: ENG-5/6
3.	EVALUATE API/DP IN DEEPER WATER/HIGHER RPM	DONE: ENG-5
4.	EVAL EFFECT OF FRICTION REDUCER IN ANNULUS	DONE: ENG-5
5.	EVALUATE TAPERED STRESS JOINT	DONE: ENG-5
6.	EVALUATE MECHANICAL TENSIONING DEVICE	DONE: ENG-5
7.	TEST MOD 16" CSG HGR F/TENSION/BACK-OFF	DONE: ENG-5/6
8.	EVALUATE DRILL-IN/BACK-OFF RELEASE SYSTEM	DONE: ENG-5/6
9.	EVALUATE DP MINI-RISER TENSION W/RE-CONE	NOT DONE

LEG 132

DCS DIAMOND BIT/CORE BARREL DESIGN CHANGES UNDER CONSIDERATION
(AS A RESULT OF LEG 132 TESTING)

* GREATER SELECTION OF CORE CATCHER OPTIONS
(ADD SPRING, DOG, AND FLAPPER TYPE C'CATCHERS IF POSSIBLE)

* MULTIPLE CORE CATCHER CAPABILITY
(ABILITY TO RUN MINIMUM OF TWO C'CATCHERS SIMULTANEOUSLY)

* POSITIVE TELL TALE OF LATCH-IN
(ELIMINATE GUESS WORK ASSOCIATED WITH CHALKED/PAINTED DOGS)

* GREATER SELECTION OF DIAMOND BITS
(INCLUDING PILOTED IMPREGNATED BITS)

* ADDITION OF CHISEL TOOTH BIT DEPLUGGER
(WITH SEDIMENT TRAP POCKETS)

* POSSIBLE ADDITION OF DRIVE SAMPLER/PISTON CORER OPTION
(F/SAMPLING FORMATIONS UNRECOVERABLE WITH ROT/CIRCULATION)

LEG 132
HRB/DI-BHA DESIGN CHANGES UNDER CONSIDERATION
(AS A RESULT OF LEG 132 TESTING)

* SMALLER DIAMETER (EIGHT FT) GIMBALED REENTRY CONE POSSIBLY HINGED FOR HANDLING EFFICIENCY ON RECOVERY (CHEAPER/OPERATIONALLY MORE EFFICIENT/STORABLE)

* RAISE GIMBAL POINT/COUNTER BALANCE/ELIMINATE BUOYANCY (CHEAPER/OPERATIONALLY MORE EFFICIENT/STORABLE)

* ADD SINGLE ELECTRONIC TILT BEACON TO HRB (ABSOLUTELY MANDATORY TO SAVE SHIP'S TIME AND TO MINIMIZE RISK OF FAILURE - COST CAN POSSIBLY BE AMORTIZED OVER SEVERAL DEPLOYMENTS IF HRB'S ARE RECOVERED)

* ADD BULL'S EYE RINGS (2 EACH) TO OPPOSITE CORNERS OF HRB (MAXIMIZE POTENTIAL OF LOCATING ACCEPTABLE LANDING SITE AND MINIMIZE TIME EXPENDED)

* REDESIGN HRB SECTIONS FOR OPTIONAL STEEL PLATE BALLASTING (STEEL SHOT/CEMENT ALTHOUGH A REASONABLE IDEA IS NOT ALWAYS AVAILABLE FORCING THE USE OF LARGER/LESS EFFICIENT WEIGHT TO VOLUME RATIO MATERIAL SUCH AS THE PIG IRON BILLETS USED ON L132)

* RECONSIDER QUESTION OF 3 LEGS VERSUS 4 ON HRB (EVIDENCE OF TOTTERING (4 LEG BASE) SUGGESTS A 3 LEG DESIGN TO BE MORE STABLE - THE DEBATE RAGES ON)

* ELIMINATE SHEAR OUT DOGS AND STRENGTHEN TENSIONING J-TOOL (THIS TOOL MECHANICALLY FAILED ON L132. THE DECISION WAS MADE TO ELIMINATE THE SHEAR OUT FEATURE, STRENGTHEN THE TOOL BODY, AND RELY ONLY ON THE SHEAR OUT BOLTS IN THE TAPERED STRESS JOINT FLANGE FOR EMERGENCY DISCONNECT)

* MULTIPLE STAGE DRILL-IN-BHA (THE DI-BHA CONCEPT WAS PROVEN VIABLE ON L132, HOWEVER, FRICTION TAPER ANGLE MUST BE REVIEWED AND TORSIONAL KEYWAYS IN RECONE. ALSO IT IS UNLIKELY A DEPTH OF 100-150 METERS REACHABLE-MUST CONSIDER TWO STAGE SYSTEM)

STATUS OF DCS MAST/PLATFORM SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	TOP DRIVE AND NEW SCR CONTROLS	FULLY OPERATIONAL
II.	SECONDARY HEAVE COMPENSATOR SYSTEM	FULLY OPERATIONAL
III.	CORING WINCH AND CONTROLS	FULLY OPERATIONAL[1]
IV.	HYDRAULIC SYSTEM & CONTROLS	FULLY OPERATIONAL[2]
V.	FEED CYLINDERS	FULLY OPERATIONAL[3]
VI.	HYDRAULIC PUMPS (MAIN & AUX.)	FULLY OPERATIONAL
VII.	PLATFORM AUXILIARY SYSTEMS (TONGS, TUGGERS, ETC)	FULLY OPERATIONAL[4]
VIII.	MUD PUMP CONTROLS	FULLY OPERATIONAL
IX.	MUD STANDPIPE SYSTEM	FULLY OPERATIONAL
X.	TUBING STRING DESIGN	FULLY OPERATIONAL

[1] NEED PROPER PILOTED WINCH CONTROL FOR IMPROVED LOW SPEED CONTROL.

[2] NEED TO CHANGE RETURN LINE FILTERS TO HIGHER PRESSURE TYPE.

[3] CYLINDERS NEED TO BE REBUILT AND HIGH PRESSURE/DUAL SEALS INSTALLED.

[4] TUGGER CONTROLS NEED TO BE REPLACED WITH ALTERNATES FOR BETTER LOW SPEED CONTROL.

STATUS OF HARD ROCK BASE (HRB) SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	GIMBAL	FULLY OPERATIONAL
II.	MODULAR TANK CONCEPT	FULLY OPERATIONAL
III.	FLOATATION	TO BE PHASED OUT[1]
IV.	CASING HANGER	FULLY OPERATIONAL
V.	LANDING SEAT/CUTTINGS REMOVAL	QUASI OPERATIONAL[2]
VI.	LEG SUPPORTS	QUASI OPERATIONAL[3]
VII.	BALLASTING	FULLY OPERATIONAL
VIII.	CONE	REQ'S SIZE REDUCTION[1]
IX.	TENSIONING TOOL	TO BE REDESIGNED[4]
X.	STRESS JOINT	FULLY OPERATIONAL
XI.	MINI RISER CONCEPT	FULLY OPERATIONAL

[1]ELIMINATE SYNTACTIC FOAM BY USING SMALLER LIGHTER CONE AND COUNTER BALANCING CASING HANGER.

[2]NEED TO STRENGTHEN KEYS TO PREVENT LANDING SEAT ROTATION AND INVESTIGATE POSSIBLE FRICTION TAPER MODIFICATIONS.

[3]INVESTIGATE STRONGER/FEWER SUPPORT LEGS.

[4]ELIMINATE SHEAR PINS AND STRENGTHEN FABRICATION.

BONUS

NEW HRB DEMONSTRATED CAPABILITY TO BE MOVED AT THE SEA FLOOR FOR MULTIPLE HOLES ON-SITE OR RECOVERED TO THE VESSEL FOR POTENTIAL MULTIPLE SITE USAGE.

STATUS OF MODIFIED DCS REENTRY CONE SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	CONE	FULLY OPERATIONAL
II.	CASING HANGER	FULLY OPERATIONAL[1]
III.	BASE STRUCTURE	FULLY OPERATIONAL
IV.	DISCHARGE TUBES	UNTESTED[2]
V.	COLLECTOR MANIFOLD	UNTESTED[2]

[1]INVESTIGATION OF FABRICATION Q/C CONTROLS AND FIT TESTING IS WARRANTED.

[2]SYSTEM WORKED DURING LIMITED TEST OF DRILL-IN BHA BUT NOT TESTED WITH DCS.

STATUS OF DRILL-IN BOTTOM HOLE ASSEMBLY SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	BACK-OFF SUB	QUASI OPERATIONAL[1]
II.	SPIRAL STABILIZERS	FULLY OPERATIONAL
III.	ROLLER CONE BITS	FULLY OPERATIONAL
IV.	CENTER BIT	FULLY OPERATIONAL
V.	MODIFIED XCB LATCH	FULLY OPERATIONAL
VI.	PDCM W/LOCKOUT DEVICE	FULLY OPERATIONAL

[1]BACK-OFF CONCEPT VALID HOWEVER ADDITIONAL TESTING AND REVIEW OF THE TAPER ANGLE IS REQUIRED AND C-RING GLAND REQUIRES REDESIGN.

STATUS OF DCS CORE BARREL SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	CORE BARREL	FULLY OPERATIONAL[1]
II.	RETRIEVAL SYSTEM	FULLY OPERATIONAL
III.	DIAMOND BITS	FULLY OPERATIONAL[2]
IV.	CENTER BIT	FULLY OPERATIONAL
V.	BIT DEPLUGGER	FULLY OPERATIONAL
VI.	HANDLING SYSTEM	FULLY OPERATIONAL
VII.	LINERS	FULLY OPERATIONAL
VIII.	CORE CATCHERS	REQ'S VERSATILITY[3]

[1]WILL EVALUATE INCORPORATION OF FLOAT VALVE IN ORDER TO MINIMIZE BACK-FLOW.

[2]WILL REQUIRE MORE DRILLING EXPERIENCE TO REFINE BIT LIFE AND PENETRATION RATE.

[3]WILL EXPLORE ADDITIONAL TYPES OF CORE CATCHERS FOR UNCONSOLIDATED SEDIMENTS.

NOTE

ALL MECHANICAL PROBLEMS ASSOCIATED WITH LEG 124E WIRELINE CORE BARREL SYSTEM HAVE BEEN SOLVED.

Appendix F

ODP REENTRY CONE PLUG

WITH REENTRY CONE & SENSOR STRING

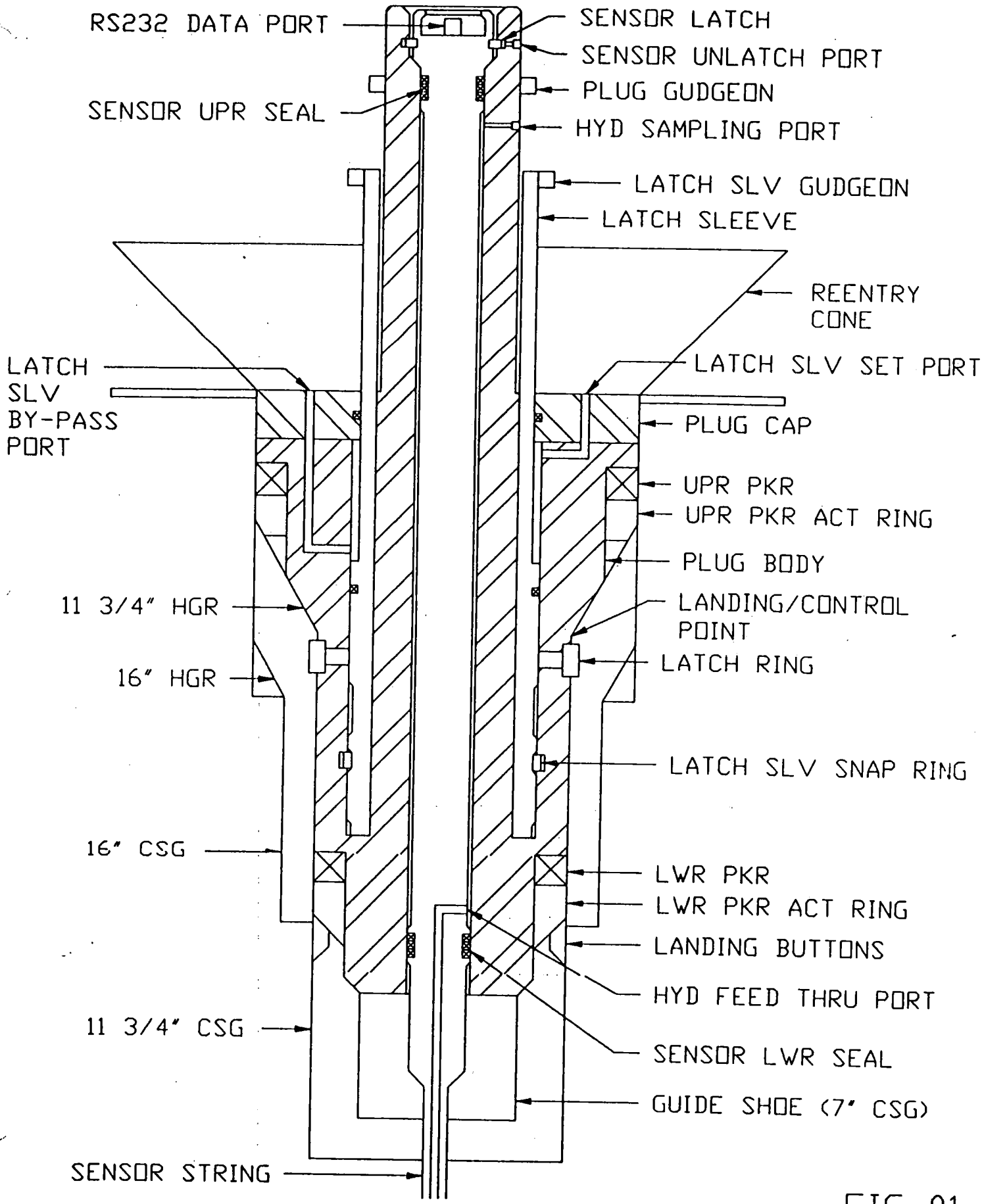


FIG 01

ODP REENTRY CONE PLUG

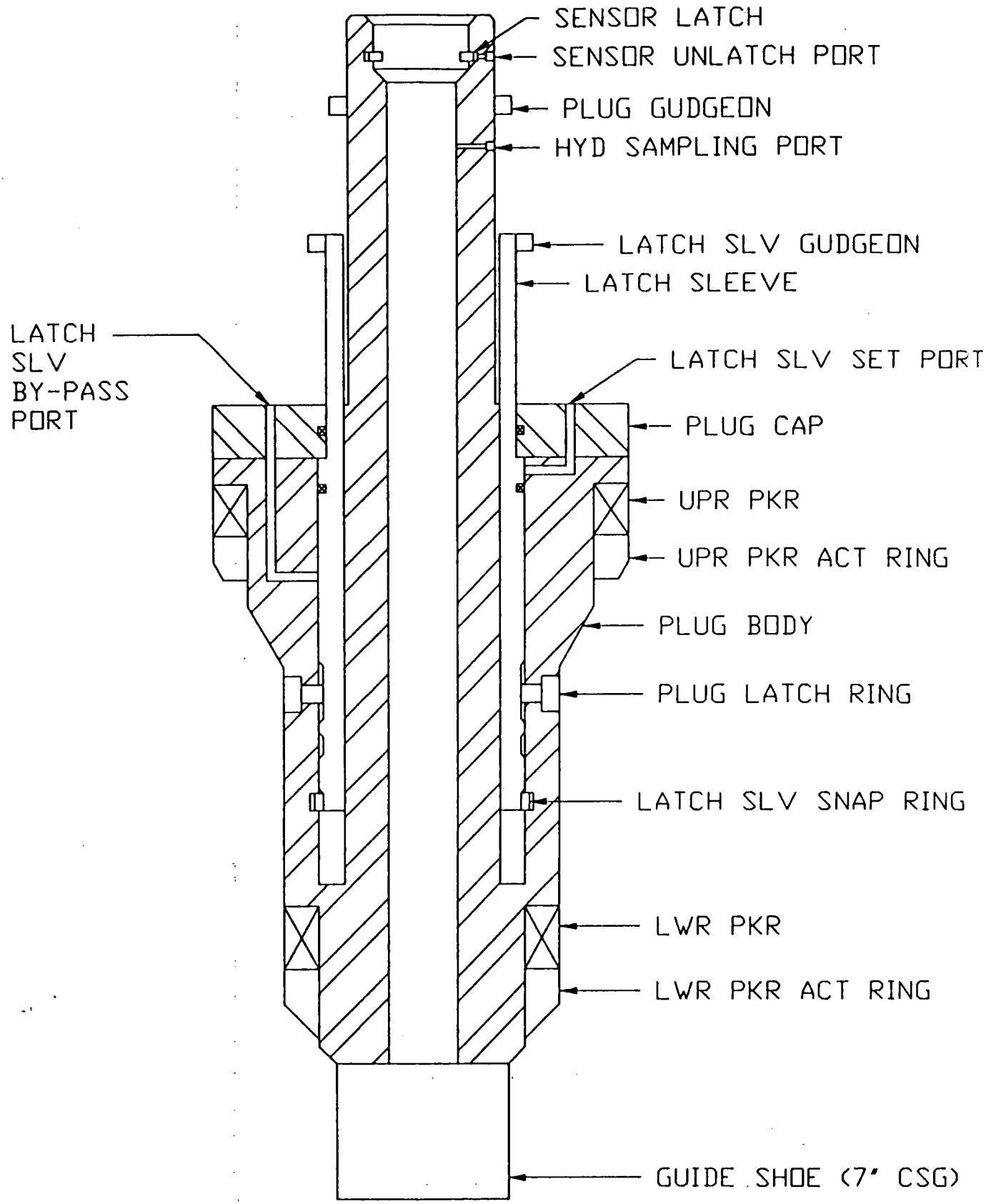


FIG 03

ODP REENTRY CONE PLUG

WITH RETRIEVING TOOL

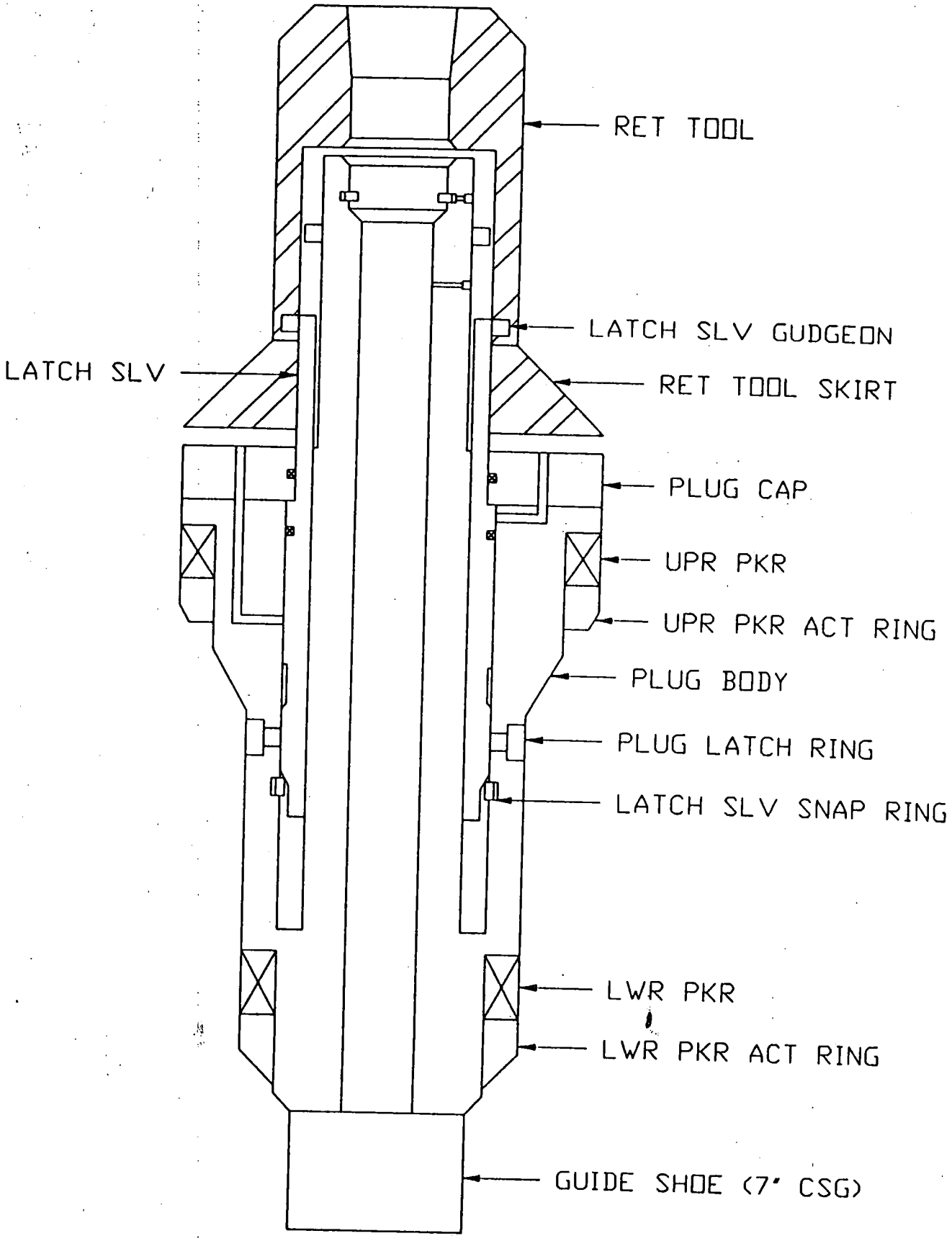
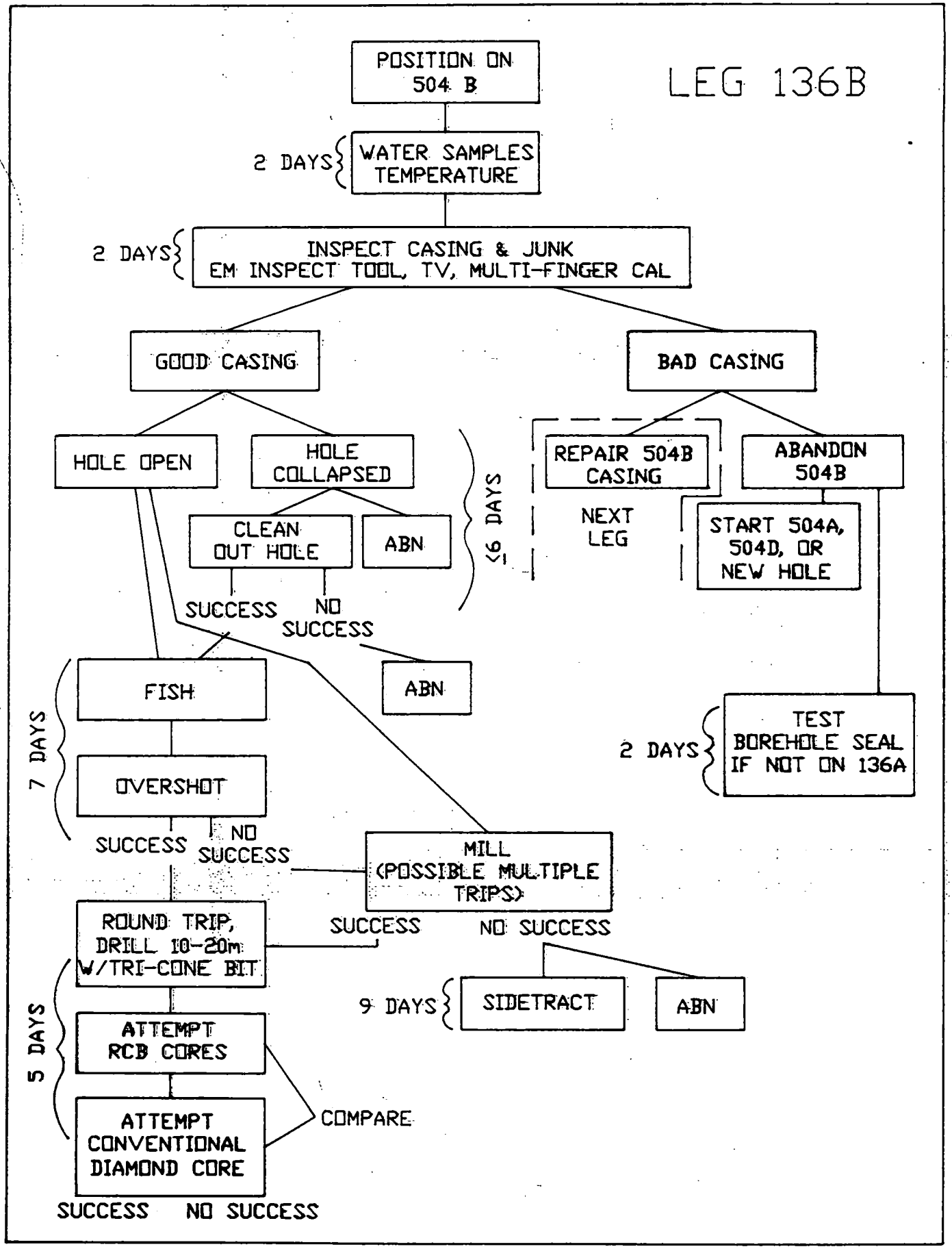
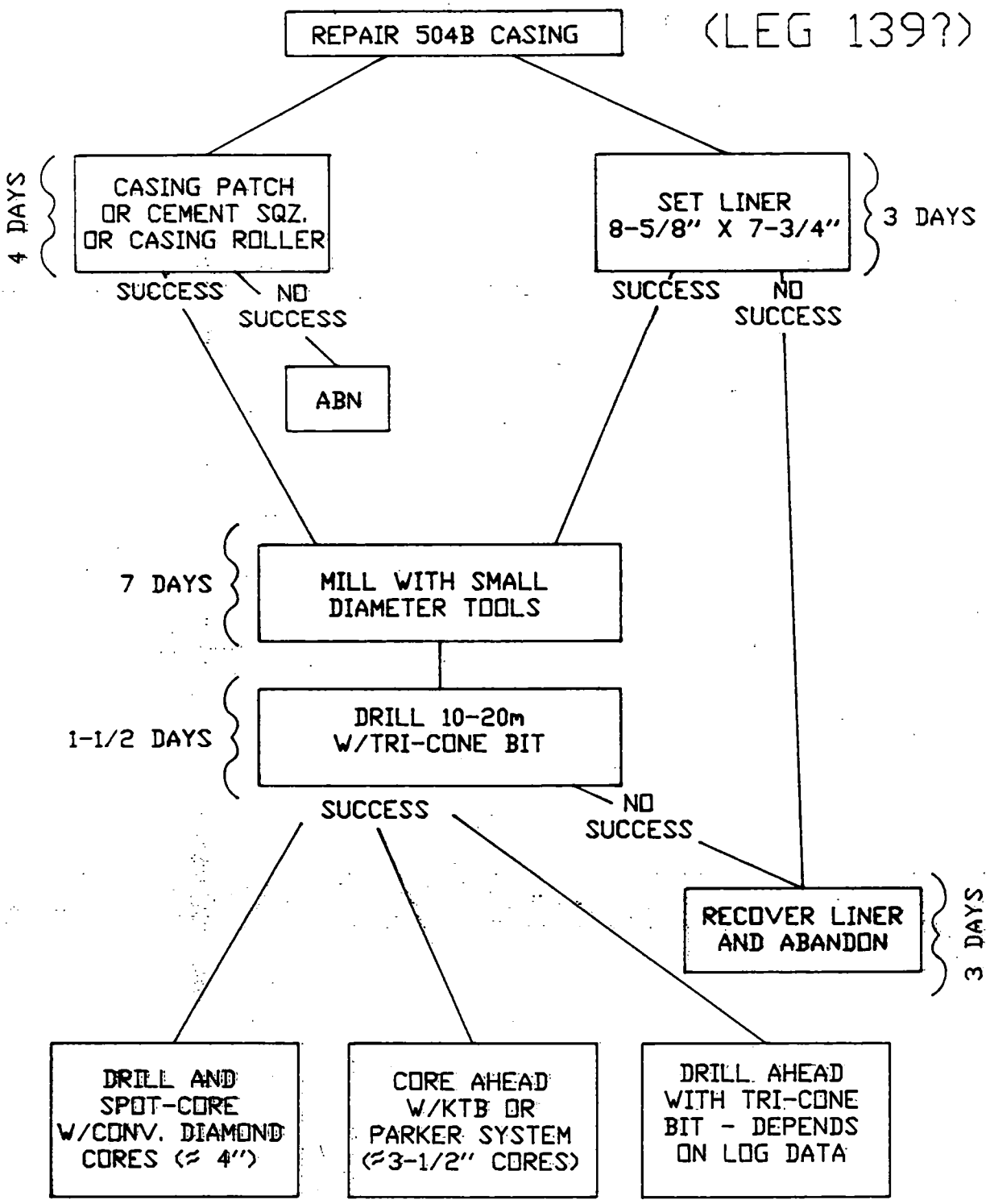


FIG 05


LEG 136B
POSITION ON 504 B
2 DAYS
WATER SAMPLES TEMPERATURE
2 DAYS
INSPECT CASING & JUNK EM INSPECT TOOL, TV, MULTI-FINGER CAL
GOOD CASING
BAD CASING
HOLE OPEN
HOLE COLLAPSED
REPAIR 504B CASING
ABANDON 504B
<6 DAYS
NEXT LEG
CLEAN OUT HOLE
ABN
START 504A, 504D, OR NEW HOLE
SUCCESS
NO SUCCESS
FISH
ABN
7 DAYS
TEST BOREHOLE SEAL IF NOT ON 136A
2 DAYS
OVERSHOT
SUCCESS
NO SUCCESS
MILL (POSSIBLE MULTIPLE TRIPS)
ROUND TRIP, DRILL 10-20m W/TRI-CONE BIT
SUCCESS
NO SUCCESS
9 DAYS
SIDETRACT
ABN
5 DAYS
ATTEMPT RCB CORES
ATTEMPT CONVENTIONAL DIAMOND CORE
COMPARE
SUCCESS
NO SUCCESS

504B REPAIR SCENARIOS



(LEG 139?)

SECOND 504B LEG SCENARIOS