SPRING MEETING JOIDES PLANNING COMMITTEE
23 - 25 April, 1991
University of Rhode Island, Graduate School of Oceanography
Narragansett, Rhode Island

MINUTES

Planning Committee (PCOM):

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

Liaisons:

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

Guests and Observers:

P. Crevello - Marathon Oil Company
N. Bogdanov - Institute of the Lithosphere, Moscow (USSR)
R. Duce - University of Rhode Island, Graduate School of Oceanography
P. Dauphin - National Science Foundation
A. Dziewonski - Harvard University
G. Greene - US Geological Survey, Menlo Park, California
S. Hart - Woods Hole Oceanographic Institution
J. Hawkins - University of California, San Diego, Scripps Institution of Oceanography
D. Heinrichs - National Science Foundation
E. Kappel - Joint Oceanographic Institutions, Inc.
R. Larson - University of Rhode Island, Graduate School of Oceanography
M. McNutt - Massachusetts Institute of Technology
D. Rea - University of Michigan
A. Sharaskin - Geological Institute, Moscow (USSR)
M. Storms - Science Operator (ODP-TAMU)

JOIDES Office:

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

SELECTED ACRONYMS AND ABBREVIATIONS

ARC	Australian Research Council
BGR	Bundesanstalt fur Geowissenschaften und Rohstoffe
BGS	British Geological Survey
BHTV	Borehole Televiewer
BIRPS	British Institutions Reflection Profiling Syndicate
BMR	Bureau of Mineral Resources
BRGM	Bureau de Recherches Géologiques et Minières
CSDP	Continental Scientific Drilling Program
CSG	Computer Services Group (ODP)
DCS	Diamond Coring System
DFG	Deutsche Forschungsgemeinschaft
DP	Dynamic Positioning
DPG	Detailed Planning Group
ECOD	European (ESF) Consortium for the Ocean Drilling Program
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
ETH	Eidgenossiches Technische Hochschule
FMS	Formation Microscanner
FSDN	Federation of Digital Seismic Networks
FY	Fiscal Year
GSGP	Global Sedimentary Geology Program
IDAS	Isothermal Decompression Analysis System
IFREMER	Institut Francais de Recherche pour l'Exploitation de la Mer
IGBP(/PAGES)	International Geosphere/Biosphere Program (/Past Global Changes)
ILP	International Lithosphere Program
IOC	Intergovernmental Oceanographic Commission
IPR	Intellectual Property Rights
IRIS	Incorporated Research Institutions for Seismology
JAMSTEC	Japan Marine Science and Technology Center
JAPEX	Japan Petroleum Exploration Company
JGOFS	Joint Global Ocean Flux Studies
KTB	Kontinentales Tiefbohrprogramm der Bundesrepublik Deutschland
LBL	Lawrence Berkeley Laboratory
LANL	Los Alamos National Laboratory
LRP	Long Range Plan
MCS	Multi-Channel Seismic
MDCB	Motor-Driven Core Barrel
MOU	Memorandum of Understanding
MRC	Micropaleontological Reference Center
NADP	Nansen Arctic Drilling Program
NAS	National Academy of Science
NERC	Natural Environment Research Council
NSERC	National Scientific and Engineering Research Council
ONR	Office of Naval Research
OSN	Ocean Seismic Network
PCS	Pressure Core Sampler
PDC	Poly-crystalline Diamond Compact (drilling bit)
PEC	Performance Evaluation Committee
PPI	Producer Price Index
RFP	Request for Proposals
RIDGE, InterRIDGE	Ridge Inter-Disciplinary Global Experiments (US and international)
SCM	Sonic Core Monitor
SNL	Sandia National Laboratory
SOE	Special Operating Expense
STA	Science and Technology Agency (of Japan)
USSAC	US Scientific Advisory Committee
USSSP	US Science Support Program
VPC	Vibro-Percussive Corer
WCRP	World Climate Research Program
WG	Working Group
WOCE	World Ocean Circulation Experiment

FY92 Programs:

A&G	Atolls and Guyots
CA	Cascadia margin
CTJ	Chile Triple Junction
EPR	East Pacific Rise
HD	Hess Deep
NPT	North Pacific Transect
504B	(Deepening) Hole 504B

DPGs and WGs:

A&G-DPG	Atolls and Guyots DPG
NAAG-DPG	North Atlantic-Arctic Gateways DPG
NARM-DPG	North Atlantic Rifted Margins DPG
OD-WG	Offset Drilling WG
SL-WG	Sea-Level WG

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EXECUTIVE SUMMARY

PCOM Motions

- PCOM approves the minutes of the 28 November - 1 December, 1990 PCOM meeting (p.7).

- PCOM adopts the agenda for the 23 - 25 April, 1991 PCOM meeting (p.7).

- PCOM sets the direction of the drilling vessel for the next four years as follows:
  1) In the remainder of FY 91, confirmed as is in the current Program Plan.
  2) In FY 92, and beyond to January 1993, confirmed as is in the Program Plan approved at its November 1990 meeting in Kailua-Kona, Hawaii, through Leg 147, Engineering EPR (in the event that DCS Phase III is not ready, Hess Deep will be substituted), ending in Panama on or about 21 January 1993. The Program Plan may include up to 10 days of supplemental science as moved at the November 1990 meeting.
  3) Until April 1994, in the North Atlantic. FY 1993 Program to be finalized in December 1991 at the Annual Meeting of PCOM with Panel Chairs.
  4) In April 1994 through April 1995, in the general direction of highly ranked proposals in the Atlantic Ocean and adjacent seas and the eastern Pacific.
  5) PCOM's long-range commitment to engineering development in support of highly ranked thematic objectives must be considered in planning specific cruise tracks.

  PCOM reaffirms its stand that at its spring 1992 meeting, and at subsequent meetings, it will evaluate again the state of panel recommendations, technological developments, and the overall state of the Ocean Drilling Program, and again set the general direction of the drilling vessel for the subsequent four years, with a relatively firm early track and a relatively flexible later direction (p.31).

- PCOM prioritizes engineering development as follows:
  1) Improvement and development of the Diamond Coring System.
  2) Improvement and development of the XCB Coring System.

  After these major priorities, PCOM believes that development should respond to the needs of scheduled legs. This implies that the next priorities are:

  3) Cork/PCS/high temperature preparations, in preparation for Leg 139.
  4) Orientation needs (hard rock orientation, Sonic Core Monitor, electronic multishot), in preparation for Leg 141.
  5) Vibra Percussive Corer, in preparation for scheduled 1992 SGPP objectives.
  6) Motor Driven Core Barrel, in preparation for the use of GEOPROPS in Cascadia drilling, Leg 146.

  Each of these development activities should be reevaluated after testing on the appropriate leg(s).

  Other active development efforts should continue on an as-possible basis.

  If there are short-term perturbations of the schedule, PCOM assumes that engineering development will respond to the schedule.

PCOM expects reports on the development schedule in the future so that it may reevaluate the priorities (p.37).

- PCOM establishes an Offset Drilling Working Group (OD-WG) to be charged with:
  a) establishing and setting into priority scientific objectives and a drilling strategy of a program for drilling offset sections of oceanic crust and upper mantle;
  b) identifying target areas where specific objectives can be addressed;
  c) identifying other survey information necessary to establish the geologic context of an offset drilling program; and
  d) identifying the technological requirements to implement the strategy (p.40).

- In view of the awkward wording of paragraph 2 of the DPG mandate, PCOM moves that Paragraph 2 be stricken and replaced with:
  "The DPGs are composed of a balance of U.S. and non-U.S. members, and proponents and non-proponents. The size of the DPG should be commensurate with the charge of the group" (p.41).

- PCOM thanks the North Atlantic Arctic Gateways Detailed Planning Group (NAAG-DPG) and the Atolls and Guyots Detailed Planning Group (A&G-DPG) for their expeditious and informative reports. We consider both DPGs to have fulfilled their charge and accordingly disband them (p.41).

- PCOM moves that the persons nominated for panel, DPG and WG membership be invited to serve (p.46).

- PCOM recommends against the setting of a liner in Hole 504B unless it is absolutely necessary to compensate for failing casing in the hole (p.55).

- PCOM moves that Hole 504B should be advanced in future with continuous coring procedures, especially in light of critical transitions to be sampled (p.55).

<u>PCOM Consensuses</u>

- PCOM recommends that the highest priority for downhole tool acquisition or development be a sensitive downhole magnetic susceptibility tool.
  Ideally, a susceptibility tool that can be incorporated into each tool string should be developed.
  In the interim, or alternatively, existing susceptibility tools such as the French magnetometers should be used on Leg 141 and subsequent legs to implement core-log correlation (p.38).

- PCOM supports the convening of a specialist group to consider downhole fluid sampling. The meeting is to be organized by P. Worthington (DMP chairperson) and should be held, if possible, in conjunction with the June 1991 joint meeting of DMP and SGPP. If the specialist group does not meet at that time, it should meet as soon as possible. The specialist meeting is to be separate from the DMP meeting agenda (p.40).

- PCOM approves the change from an off-axis location, as originally recommended by the EPR-DPG, to an on-axis location for the first site to be drilled during Leg 142 on the East Pacific Rise (p.43).

- PCOM expresses its appreciation and thanks to T. Moore for his long and outstanding service as IHP chairperson. PCOM hopes that his schedule will permit him to remain on IHP as a member (p. 45).

- PCOM notes the tendency for shipboard scientific parties to be too large. Concerns are:
  1.) The difficulty of managing large groups.
  2.) The high ratio of scientists to technical support staff.
  3.) Crowding of laboratory facilities and work stations.
  4.) Amounts of time and effort needed to support individual scientists' needs (e.g., sampling) (p. 53).

Mandate

- Preliminary OPCOM Mandate

1.) DCS development and testing, including:
   (a) Deployment from alternate platforms, for continuous testing.
   (b) Consideration of downhole measurements.
2.) Deep drilling.
   (a) 2 to 2.5 km holes, leading to maximizing the capabilities of the *JOIDES Resolution.*
   (b) Long-term planning, beyond *JOIDES Resolution.*
3.) Alternate platforms.
   (a) 1995 - 1996: linkage with "other" programs (e.g., global change).
   (b) Long coring facilities.
4.) High-latitude support vessels (FY93 and beyond).
5.) Staff costs for the above.

For each of the above, there must be discussion of the subject, costs and timing (i.e. flow charts) (p. 51).

Spring Meeting JOIDES PCOM
Tuesday, 23 April 1991

888 WELCOME AND INTRODUCTION

PCOM Chairperson Austin called the 1991 Spring Meeting of the JOIDES Planning Committee to order. R. Duce welcomed the attendees to Rhode Island. During his remarks, he said that he would have to leave the meeting that day to attend a ceremony in California at which a piece of Captain James Cook's vessel, *Endeavour*, would be presented to NASA to be carried into space aboard the new shuttle *Endeavour*.

Leinen explained meeting logistics, including a clambake hosted by the University of Rhode Island, Graduate School of Oceanography and JOI, Inc. Austin then called for introductions around the table.

889 APPROVAL OF MINUTES, 28 NOVEMBER - 1 DECEMBER 1990 HAWAII PCOM MEETING

Austin called for comments, corrections and approval of the minutes of the 28 November - 1 December 1990 PCOM Meeting held at Kailua-Kona, Hawaii. The minutes included modifications through April 10, 1991. There were no further corrections.

PCOM Motion

PCOM approves the minutes of the 28 November - 1 December 1990 PCOM meeting.
Motion Leinen, second Natland Vote: for 16; against 0; abstain 0; absent 0

890 APPROVAL OF AGENDA

Austin stated that the main purpose of the meeting was to plan the general direction of the drilling vessel for the next four years. Another was to devise a list of engineering priorities for ODP-TAMU. Other important, but subordinate, purposes were: to decide matters related to various reports from liaisons to PCOM, from PCOM liaisons to panels and from new DPGs and WGs, to make any adjustments in the planning structure necessary to prepare for the next four years in general and for Fiscal Year 1993 (FY93) in particular (approximately late January, 1993 - late September, 1993), to hear recent scientific results from drilling off Vanuatu (Leg 134), in the Lau Basin (Leg 135), and off Hawaii (OSN-1 pilot hole, Leg 136), and to conduct routine PCOM business.

Austin summarized the agenda and then called for any new items to be added to agenda Item O (Other Business). Responding to a question from Duncan, Austin said that progress at Hole 504B (Leg 137) would be presented in the Science Operator report. He then called for adoption of the agenda.

PCOM Motion

PCOM adopts the agenda for the 23 - 25 April 1991 PCOM meeting.
Motion Moberly, second Malpas Vote: for 15; against 0; abstain 1; absent 0

891 ODP REPORTS BY LIAISONS TO PCOM

EXCOM

Austin said that EXCOM had not met since October, 1990. Since then, the USSR has joined ODP and representatives were expected at the present meeting. Leinen reported that Bogdanov was expected that day, and Sharaskin the next. Heinrichs said that the USSR would become a member on May 1, 1991, but that they should be viewed at this meeting as members, not observers. Austin added that there were tentative plans for a delegation from ODP to visit the USSR in May. Formal participation by shipboard scientists from the USSR would begin with Leg 138.

NSF

Malfait began his report (see handout distributed at meeting) by noting that the NSF budget for FY91 increased by 11.1%. The Ocean Sciences budget rose by 11.8% and ocean drilling by 9.3%. The present US administration has strongly supported NSF's budget. In FY92, the budget for ocean drilling is projected to rise by 4%.

In FY91, NSF has augmented the original ocean drilling operations target budget of $39.6M with a $1.54M supplement to cover increased fuel costs. Fuel costs have since fallen and it is uncertain whether a fuel supplement to the $41.4M FY92 budget will be required. However, a seventh international partner, the USSR, is joining ODP and, based on this and other developments, NSF has proposed a new target FY92 budget of $43.5M to bring it into line with the Long Range Plan (LRP) budget for FY92. The additional $2.1M is viewed by NSF as providing an opportunity to achieve a more complete implementation of LRP objectives, including access to additional facilities and technology. This budget addition was communicated to JOI, Inc. during the week preceding the Spring PCOM Meeting.

Malfait then summarized FY91 and FY92 field programs (see handout). Lancelot pointed out that the French did not participate in the joint US-French Marquesas survey because a change of dates for the survey led to a conflict in the French ship's schedule.

Malfait noted that Dauphin has now joined NSF's ocean drilling staff. USSAC has been approved by the National Science Board for the next three years and Leinen and Duncan have been selected to be among the first participants in a new USSAC distinguished lecturer program. The US government has extended its indemnification of ODP to September, 1993. (ODP is insured to $200M, and US government indemnification applies above this figure.)

Malfait went on to summarize recent developments in the US academic research fleet. *RV Knorr* returns in late 1991, and *RV Melville* in early 1992. *RV Thompson* and *RV Nathaniel Palmer* will be in operation in late 1991 and late 1992, respectively. *RV Thomas Washington* will be retired in early 1992. Proposals for the planned AGOR 24 and 25 research vessels are being submitted to ONR. They will be similar to the *Thompson*, and they will be in operation in 1994 and 1996, respectively. Heinrichs noted that proposals can be for AGOR 24, 25 or both.

The crystal ball: planning for renewal

Heinrichs informed PCOM that the NSF plan is to get the basic framework for renewal settled during calendar year 1991. NSF will ask for a single extension of ODP and will seek agreement "in principle" to a ten-year renewal. During the first five years, *JOIDES Resolution* will continue to be the primary vessel. Technology development will proceed concurrently. Other platforms might be adopted in the post-1998 period. Examples of such alternative platforms include the Japanese vessel, now in the design stage, the European NEREIS project, and a drillship under development in the USSR.

On the US side, all presentations to the National Science Board (NSB) have been very positive. NSF will request that Frank Press ask the National Academy of Science (NAS) to establish an *ad hoc* committee to review the LRP. Input will be obtained from the member countries, following which an NSF committee will be established to examine all input and make a recommendation. Heinrichs added that he assumed that the recommendation would be to continue ODP.

Cita-Sironi asked if she could cite Heinrich's statement on renewal periods in the ESF renewal document. Heinrichs stated that the ODP Council (ODPC) framework is to obtain agreement in principle to a ten year renewal with a mid-term review. This would involve a hard commitment to five years and general agreement to ten. Heinrichs responded to a question from Austin on the timeframe for the reviews by stating that all national reviews would be complete by the end of calendar year 1991 and NSF would be in a position to sign formal MOUs by mid-1992. The details of running and managing ODP with the international partners will be addressed in late 1991 to early 1992. Austin asked if there was a role for PCOM and Heinrichs replied that PCOM will play a central role in providing input on the science plan to EXCOM.

JOI, INC.

Pyle began his report (Appendix 1) by noting that a deficit had been carried over from FY90, largely because of increased FMS logging. He recommended that PCOM consider the recent practice of holding post-cruise meetings away from ODP-TAMU. Austin said that this item would be added to Item O. Pyle continued, noting that only $0.5M - $1M of the $1.54M fuel supplement from NSF will be needed. The USSR will begin scientific participation on Leg 138, and their first financial contribution is expected in the last quarter of FY91.

The publicity film shot during Leg 105 is virtually complete. NSF wants further editing, but it will be sent to the Arts & Entertainment network by the end of April. Malpas asked about broadcasting rights outside the USA, and Pyle replied that this was not yet possible, but that rights were being negotiated. Interested parties should contact JOI, Inc. Responding to Duncan, Pyle said that the film will be of 45 to 50 minutes duration (one hour minus time for commercials) and is directed at a general public audience. A difficulty in editing the film has been that no extra footage could be shot following Leg 105. Duncan noted that there is a video camera on the ship and asked if an archive of film footage could be built up. Pyle, however, said that JOI, Inc. had had no luck in that regard. Swart noted that an Australian film crew had filmed during Leg 133. Pyle expressed interest and may contact P. Davies, co-chief of Leg 133, for more information.

Work in establishing liaisons with other international earth sciences research programs is proceeding. Pyle foresees a greater role for PCOM once he has made initial contacts. In

addition to those programs that have been contacted previously (Appendix 1), the US Global Change Research Program has expressed interest in working with ODP (see handout distributed at meeting).

The third Performance Evaluation Committee (PEC-III) has been established under John Maxwell of the University of Texas at Austin. (S. Hart, a member of PEC-III, attended the first part of the meeting and M. McNutt, also of PEC-III, attended the remainder.) PEC-III would complete its work by the end of calendar year 1991.

Pyle went on to discuss the status of high temperature tools. The JAPEX temperature, pressure and flow tool has been leased and will be going to ODP-LDGO soon. The BRGM temperature tool has also been leased, as have water samplers from LANL and LBL. A meeting with BGS and Camborne School of Mines (UK), to discuss joint development of a resistivity tool, is scheduled for April 29 - 30. A non-DMP panelist is needed for discussions with KTB and Sandia.

The FY92 program plan is outlined in Appendix 1. The draft program plan has been sent to NSF for evaluation. The next step will be to send it to EXCOM in July. The new budget begins in October. (The FY92 budget, together with SOEs, are outlined in Appendix 1.) In response to a question from Beiersdorf, Francis said that the SOE for Hess Deep (HD) is for guidebases and drilling motors. If Leg 140 is Hole 504B, this SOE money will go to DCS development.

Pyle referred to "Opportunity '92", the additional $2.1M over and above the FY92 program budget to be provided by NSF to further progress on the LRP. Possible uses for the funds include an alternate platform for shallow-water drilling and long coring from another vessel for paleoceanography. PCOM should advise JOI, Inc. on this matter, perhaps through an advisory group analogous to STRATCOM, that might include panel chairpersons. Austin noted that the Sea Level Working Group (SL-WG) and Atolls and Guyots Detailed Planning Group (A&G-DPG) had asked for alternate platforms, and that this issue would be discussed later in the agenda. Responding to a question from Duncan, Austin said that discussions on the expenditure of these new funds would cover more than alternate platforms. He added that the decisions should be made quickly and reported to JOI, Inc. before October 1. Pyle concluded by noting that next year a four year program plan (FY93 - FY96) would be written and the schedule for its review and approval accelerated.

BCOM

Moberly referred to the BCOM report (Agenda Book white pages 75 - 80). There are four dollar amounts to be kept in mind: 1.) the initial target of $41.4M, 2.) the draft budget of $41.6M, 3.) the long-term estimate of $42.5M, and 4.) the new funds which raise the budget to $43.5M.

BCOM proposed that PCOM should evaluate each item of engineering development and decide whether to terminate some in order to progress more rapidly with others. Moberly said that the $125,000 SOE for additional technological developments had now been increased by the additional NSF funds. If the program is not renewed, BCOM would have to address a close-down budget in FY93. Malfait pointed out that FY93 would be an operating year, even in the event of non-renewal, but Moberly said that the budget would still have to be modified, as there would be, for instance, no purchase of new equipment.

Austin said that PCOM would return to the issue of engineering prioritization, stating that this was not simply a question of money, but also of manpower. Heinrichs said that the additional $2.1M is not an ordinary SOE, in the view of NSF, because it is to further the achievement of scientific goals. He added, however, that this could involve engineering development.

SCIENCE OPERATOR

Francis thanked NSF for helping ODP-TAMU through the period of elevated oil prices.

Leg 135 began with a port call in Fiji. In spite of the *JOIDES Resolution* having been required to remain at anchor outside the port for a whole day, the port call was accomplished on schedule. The drill-in casing with funnel was not used on this leg. Recovery rates were poor in the breccia, fractured vesicular basalts, and vitric sands encountered. Recovery rate was as low as 1% in parts of some holes, emphasizing the importance of logs. The MDCB was run, but with little success. The scientific party left the ship at Pago-Pago, but the SEDCO staff stayed aboard until Honolulu.

Francis deferred the report on Leg 136 (OSN-1) to the following day, at Austin's suggestion. Leg 137 (in progress at the time of the meeting) involved the cleaning of Hole 504B. Francis reported that the bottom of the hole had reached 1615 - 1620 mbsf (it had been 1562 mbsf). Leg 111 junk had been successfully cleaned from the hole. Before cleaning operations, a temperature log was run in the undisturbed hole. The temperature at the bottom of the hole was 165°C, indicating a linear temperature gradient, below the top part of the hole, of 61°C/km. LANL and LBL fluid samplers were tested for use on Leg 139. Nine runs were made and eight samples obtained. The samples are considered useful, but somewhat contaminated. Hole cleaning began with fishing followed by milling. The casing is in good condition and there is no sign of caving. A tricone bit was used to advance the hole to 1570 mbsf, followed by coring with a rotary core barrel (RCB) to 1615 mbsf. Recovery was 14% of the penetration of 45 m. The RCB bit showed damage, and it was feared that there might be some junk remaining. Tricone drilling was, therefore, resumed. If the hole is clean, a conventional diamond core barrel (DCB) may be used, together with a permeability test, borehole televiewer (BHTV) and the NaBr tracer experiment proposed by J. Gieskes and approved by DMP. Francis said that legs 136 and 137 have provided a useful "breather" for ODP-TAMU, requiring fewer technicians and permitting necessary alterations to the ship and computers.

Langseth asked about the MDCB, and Francis replied that it had been run on legs 134 and 135. It was thought to have been misassembled for one run on Leg 135. Hawkins (Leg 135 co-chief) added that the MDCB had been tried about four times on Leg 135 in fairly hard, vesicular, jointed basalt and that he had not been impressed with the tool. Greene (Leg 134 co-chief) said that the MDCB had also been tried about four times on Leg 134. The corer had worked, but there had been no recovery. Storms reported that, following legs 134 and 135, the MDCB was analyzed and errors found in the design computer program. The weight-on-bit used in the tests had been two to three times too great. Storms believed that problems with the system have now been identified. Austin closed this discussion, noting that engineering matters would be addressed later in the meeting.

Francis went on to discuss near-term planning. The expectation is that Leg 138 will recover a great deal of core, perhaps 5 km. Clearances are required for two sites, from Ecuador and France. The scientific party has decided that individual sampling will not be carried out aboard

ship, but will be deferred until August, when shore-based sampling will be carried out. Between 5,000 and 10,000 samples will be taken on board, with a further 20,000 to 30,000 in August. Cita-Sironi, Swart and Moberly expressed reservations about this decision, and Lancelot asked whether all of the scientific party had been consulted. Austin said that this strategy might impact the publications schedule. Francis emphasized that only personal sampling would be deferred. Smear slides, etc. would still be taken. Leinen pointed out that this sampling plan was in the prospectus and that sufficient samples will be taken for shipboard stratigraphy. The reason for deferring personal sampling is the need for intensive sampling for Neogene stratigraphy. In addition, the introduction of core-log integration involves an extra workload on the scientific party. Austin said that he saw this as a leg-specific strategy, not a precedent, and Lancelot added that PCOM should welcome this decision as long as no rules are broken (i.e., publication deadlines are met). Francis continued, pointing out that computerized visual core description will be fully operational for the first time on Leg 138 (having been tested on Leg 136). It is also hoped that computerized paleontological input will be available. Two color imaging systems will be used on the split cores: 1.) the ODP-TAMU imaging system, which generates a great deal of data (about 1 Mb per 10 cm of core), and 2.) reflectance spectroscopy, a one-dimensional system requiring less data storage (about 2 Mbyte per core), but capable of greater color resolution.

Staffing of Leg 138 is complete. Leg 138 will carry two scientists from the USSR. USSR participation requires compliance with US government security regulations concerning technology. The operations superintendent will be responsible for appropriate procedures. Access to certain areas (e.g., the Dynamic Positioning (DP) room and Masscomp computers) will be restricted to authorized personnel. ODP-TAMU hopes to treat the entire scientific party equally, and the new arrangements will not impact science operations. Beiersdorf asked whether the USSR had been informed. Malfait reiterated that the procedure has been set up so as to have zero or minimal impact on science operations, and Heinrichs said that he had discussed the arrangements with Bogdanov. Procedures will apply to all members of the scientific party and, in any case, it is not common practice for scientists to be in the DP room during operations. USSR personnel will still be able to use the ship's computers. Austin said that a potential problem is embarrassment to an individual (i.e., a USSR co-chief) who may be unaware of the procedures. Francis noted, however, that there will be no USSR co-chief for at least a year, and that the restrictions may be eased. Austin said that he was more concerned about morale problems and the possible impression that there are first and second class citizens; care must be taken to avert these problems. Moberly said that PCOM should be pleased that the USSR will be participating, and that if they are willing to operate under these restrictions, fine.

Francis reported that planned JGOFS involvement in Leg 138 had not materialized. Leinen added that this was the result of funding problems experienced by JGOFS personnel. Francis stated that experiments will be performed with flow control on the XCB, but that the LAST tool will not be available.

Preparations for Leg 139 have involved three persons from ODP-TAMU and three from SEDCO participating in H_2S safety training in Canada. A detector and alarm system has been purchased, the lab ventilation system will be revamped to get positive pressure in the lab stack, and portable breathing systems will be available. High temperature bits and core liners will be used together with special muds and cement. A drill string safety valve will prevent the well from flowing. Cores will be monitored for H_2S and some may have to be split outdoors. Outdoor refrigerated storage will be provided for core containing H_2S. Cores may be sealed to prevent degradation of sulfides. The WSTP tool has been modified. Leg 139 will cost $300,000 more than an ordinary leg as a result of these measures. Safety will be reviewed at the May PPSP meeting. Staffing is complete.

The indications at the time of Francis' report were that Leg 140 will be Hole 504B. Co-chiefs will be H. Dick and J. Erzinger. The leg is being staffed. Austin noted that the JOIDES Office had received comments about staffing of this leg. He added that ODP-TAMU had indicated that there might be flexibility, depending on whether the leg was Hole 504B or HD. Francis said that there would be no change in the co-chiefs.

Leg 141 (Chile Triple Junction) co-chiefs will be J. Behrman and S. Lewis. ODP-TAMU is presently performing a review of oceanographic conditions, in view of its limited experience in this region. There is a BSR at one or two sites. The MDCB, pressure core sampler phase I (PCS I), GEOPROPS (if it passes an extra land test), and the sonic core monitor (SCM) and hard rock orientation will all be tested, as will a commercial orientation device. Further development of flow control on the XCB is also scheduled. Austin noted that PCOM would return to aspects of this leg later in the agenda during discussion of the FY92 Program Plan.

Francis said that Leg 142 would be discussed later in the meeting. Regarding the staffing of future legs, A. Meyer requires nominations for legs 143 and 144 by 1 June and for legs 145 and 146 by 1 August. (See Appendix 2 for figures showing proportional international participation as shipboard scientists and co-chiefs.) An offer is pending to a new staff scientist to replace M. von Breymann.

ODP-TAMU investigated the use of Majro (the new name for Majuro) as a port call between legs 143 and 144, as requested by the A&G-DPG. It was necessary to send R. Olivas on a reconnaissance visit in early March. Hotel accommodation is skimpy and transportation would probably have to be by charter aircraft. The most difficult problem is that of obtaining fresh water. However, SEDCO feels that the ship can generate enough water on board to enable it to go without taking on additional water at Majro, and that the Majro port call is acceptable. Yokohama will be the port call between legs 144 and 145, helping both A&G drilling and the North Pacific Transect (NPT). Leg 145 will end in Victoria, instead of Seattle, saving some time and also in response to a Canadian request. The new operations schedule was handed out at the meeting (see also Appendix 2).

Appendix 2 contains proposed distribution dates for ODP volumes in FY91 and FY92. An article will be published in *EOS* following each leg, beginning with Leg 136, and comprising about 3000 words and four figures. This is in addition to *Geotimes* and *Nature* articles. Austin added that the intent is to maximize exposure of ODP, and that *EOS* has also given approval to publish the ship's schedule every year. Francis said that *Nature* tends to be more finicky, having recently rejected reports of legs 133 and 134. ODP-TAMU would like feedback from PCOM on its poster display. This is maintained at ODP-TAMU and comprises a map showing recent legs, legs in progress and future legs, together with some text about leg achievements. Francis said that ODP-TAMU is prepared to supply this display, updated every six months, to institutions of interested PCOM members. Francis envisioned a total of about twenty. Anyone interested should supply the name and address of a contact person to A. Meyer.

Responding to a question from Natland, Francis said that he would prefer to defer discussion of the Leg 136 deep hole until the following day. Beiersdorf said that the FRG receives ODP-TAMU press releases four weeks after legs have ended. He asked that Francis investigate having this process speeded up (fax the releases) and also attempt to include more scientific information.

WIRELINE LOGGING

Jarrard noted that, while every western Pacific leg had hole stability problems, he anticipated that such problems would be fewer for the eastern Pacific legs. Appendix 3 contains summaries of logging results.

Leg 134 saw the first use of the German digital televiewer, which was successful. It subsequently had problems on Leg 135 and is back out on Leg 137. The French susceptibility tool, for determining reversal stratigraphy, was also successfully run on Leg 134. The FMS was run with two passes, which yielded excellent replication. Some holes can be washed out to diameters large enough so that only two of the four FMS pads obtain data. Such hole ellipticity can indicate stress direction. One pair of FMS calipers generally chooses the long direction, and the other pair the short direction. The FMS can also be used as a dipmeter.

On the financial front, Jarrard reported the good news that ODP-LDGO has replaced its obsolete Masscomp computers at 20% of the normal cost. However, generally ODP-LDGO is in very a poor financial state, going into the red last year to cover contingencies. The same costs apply this year, but last year's deficit must also be made up. Furthermore, the workload has increased, with greater data acquisition and more frequent logging schools. Three new technicians, scheduled to join ODP-LDGO in October, should help reduce the workload. Jarrard announced that he would be leaving ODP-LDGO in September to take up a position at the University of Utah. The new PCOM liaison has not yet been established.

In response to questions from Cita-Sironi, Jarrard said that half of the fifteen ODP-LDGO staff are dedicated full-time to ODP, with the remainder of the staff being committed to ODP for between three and nine months per year. ODP-LDGO is now sending two people on about one third of all legs. Jarrard noted that he would discuss engineering developments later in the meeting, in conjunction with the ODP-TAMU engineering presentation and PCOM's engineering prioritization/discussion

892 REPORT OF RECENT DRILLING LEG: 134 (VANUATU)

Green said that Leg 134 had been a long leg, characterized by a variety of holes. Site 827 suffered from hole collapse. Approximately 400 m had been drilled, recovering an upper unit of turbidites derived from the arc; hole trouble began in basement volcaniclastics. Tectonic deformation was evident in the lower part of the hole, but the décollement was not reached. Site 828 was on the d'Entrecasteaux Ridge seaward of the toe of the accretionary prism. The four units cored provided a reference section for evaluating progress toward the décollement at sites 827 and 829. The slope of the accretionary prism was steeper at Site 829 than at Site 827. Once again, the décollement was not reached because hole instability was encountered. However, several thrust sheets, with lithologies similar to those at Site 828, were penetrated. The thrust faults act as conduits for fluid. Offscraping of sediment from the d'Entrecasteaux Ridge is evidently taking place, since Site 828 units can be identified at Site 829. The BHTV and French susceptibility tool yielded good data.

Sites 830 and 831 were drilled in the area of Bougainville Guyot. Site 830 suffered from caving and was a disappointment. Two units were cored, an upper volcanic silt and a lower volcanic breccia. Site 831 was drilled on the guyot and was a successful hole despite poor recovery of very soupy lagoonal deposits. Logging results were good and will fill in gaps left by low recovery. The Eocene to Oligocene section was present, but most of the Miocene was

missing. Responding to Natland, Greene said that his description of sediment as "soupy" indicates a feeling that the sediment contained more water than was being circulated. Soil horizons indicated several periods of emergence of the guyot.

Sites 832 and 833 were drilled in the intra-arc basin (North Aoba Basin), both to 1000 mbsf. Good logging results were achieved, though there was some hole collapse.

Green summarized Leg 134 preliminary conclusions. Two ridges are colliding with the central New Hebrides arc. The North d'Entrecasteaux Ridge is more streamlined and is passing cleanly under the arc, with sediment being offscraped. In contrast, the southern d'Entrecasteaux chain is characterized by lighter basement rocks and Bougainville Guyot might be being obducted, rather than subducted. Results from the intra-arc basin suggest that the history of arc polarity reversal may be decipherable.

Discussion

Moberly asked whether hydrocarbons had been encountered in the intra-arc basin, and whether there was evidence of silled basins. Greene replied that the Rock-Eval had not been working, but that little organic material had been recovered from the Aoba Basin. Hydrocarbons were therefore absent, but there had been little diagenesis and permeabilities remained high, so that migration would be no problem. He added that part of the section had been barren, so that shipboard analysis of benthic forams could not provide evidence of sills. Responding to Taira, Greene said that good temperature readings were not obtained at sites 828 and 829, but were obtained in the intra-arc basin, where temperatures were high. Natland asked Greene to comment on this approach to collision problems. Greene replied that he thought the approach good, but that there had been many objectives to reach. If more time had been available, the décollement could have been penetrated. Cowan noted that the leg did achieve its objective of documenting that offscraping had occurred.

893 JOIDES REPORTS BY PCOM LIAISONS

DMP

Jarrard gave the DMP report, since the PCOM liaison to DMP (Becker) was at sea on Leg 137. DMP concluded that borehole stability in tectonically active regions can be improved by casing, washing holes for logging, staged logging and the use of heavy muds. PCOM should consider devoting part of a future engineering leg to evaluating hole stability strategies. DMP also recommended increasing the number of shipboard computer personnel for core-log integration, returning to Site 801, and convening a specialist meeting to evaluate tool engineering and sampling (especially the wireline packer).

SMP

No PCOM liaison, was present at the meeting, but Cita-Sironi sent a written report to the SMP meeting. Cita-Sironi reported that SMP requested a second shipboard systems manager to provide twenty-four hour coverage. (IHP and DMP also made this recommendation.) Francis said that ODP-TAMU would support this. Austin added that SMP still wants to augment shipboard technical support (an issue first raised by the SMP chairperson at the 1990 Annual PCOM Meeting), but that discussion of this item would be deferred to later in the meeting.

Leinen stated that SMP has studied magnetic contamination in APC cores and found that the rust derives from the inside of the drill pipe. SMP suggested that a pig be run down the pipe to help clear it of rust. Francis said that a pipe pig was not always effective, as its diameter is restricted. Zinc coating is more important; this had been a SOE item, but was made a base budget expense by BCOM. Leinen pointed out that SMP viewed use of a pig as a short-term solution. Storms said that new joints added to the top of the string was the primary source of rust, and that recoating was the only good solution.

Leinen reported that SMP, DMP and IHP now agree that shipboard integration of core and log data is a first order objective; the establishment of reference depth is the key. Leinen referred to lists of hardware and software purchasing priorities for core-log integration in the SMP meeting summary (Agenda Book white pages 192). The top two items in both the hardware (natural gamma and downhole susceptibility) and software lists, plus the additional shipboard systems manager, are the main priorities. Responding to a question from Austin, Leinen said that the first software item is envisioned to be an in-house development requiring one person-year. The second software item will be purchased after evaluation of several off-the-shelf packages. In response to Natland, Leinen said that SMP felt that sediment drilling posed more critical problems than basement drilling because of the high resolution required. Austin said that PCOM might wish to take up these items later as part of the scheduled discussion on how to spend the additional NSF money available for FY92. He deferred further discussion.

IHP

IHP had met jointly with SMP; no PCOM liaison had been present. Lancelot gave the report, referring to the IHP minutes (Agenda Book white pages 193). IHP recommendations included the need for core-log integration and a second shipboard systems manager. Lancelot agreed and felt that a quantum leap in the amount of data collected aboard ship is occurring. The data management system at ODP-TAMU has been reorganized. It is now all under A. Meyer, who has reported that four positions are changing in that department. The programming required for many panel recommendations can probably be accomplished in-house by hiring a programmer for the Computer Services Group (CSG). (A CSG report was distributed at the meeting.)

IHP discussed having a scientist make corrections to the data archive system on board ship. The shipboard database is difficult to use; it is protected and cannot be easily interrogated. A shipboard "working" database is desirable. This would allow correction to the shipboard database, provided these are controlled and recorded. This is a complex matter. Greene said that a system of this type was available on Leg 134, but that participants on Leg 134 had to carry large numbers of computer diskettes off the ship and advocated condensing data storage, e.g., by use of CDs. Lancelot said that ODP-TAMU needs time to work on the shipboard database and that users can provide their own diskettes if the system exists. A "working" shipboard database would simplify the system. Austin suggested that a second systems manager might help expedite this, but Francis added that this is separate from the issue of a new systems manager and that the system on Leg 134 was experimental. Greene said that the system on Leg 134 allowed them to display all stratigraphic and log data on a "master" column, which was very valuable. Lancelot added that this will be supplemented when visual core descriptions can be entered into Macintoshes (to be available on Leg 138). IHP also discussed the problem of core depth versus logging depth.

Lancelot reported that IHP recommended amendments to the ODP-LDGO data distribution policy. Austin, however, noted that such a policy already exists and has been published in a

recent bi-monthly report. Lancelot said that IHP also recommended that rejected scientific papers be considered (in altered form) for consideration by the Editorial Review Boards as data reports. In addition, ODP-TAMU should also introduce an Email sample request system. DSDP leftover funds should be used to enter into the database data that have not been included.

Discussion

Cita-Sironi reported that J. Saunders had written to her proposing that palynomorphs be added as a standard microfossil at Micropaleontological Reference Centers (MRCs), and also that a workshop on curation and database management for the MRCs be held. Swart asked about the development of ODP CD-ROMs analogous to the DSDP CD-ROMs. Lancelot replied that such a system is being manufactured, though with a different format from that of the DSDP system. The push is to achieve online access to data, rather than the CD-ROM. Swart commented that many scientists do not find the CD-ROM system useful, as there is no software for data retrieval. Lancelot responded that it was up to the user to develop software, which could then be shared.

Austin noted that IHP had identified a staffing need and a hardware need and deferred discussion. In response to Lancelot, Francis reported that there will be a second systems manager on Leg 138, since W. Meyer will be sailing as assistant lab. officer. Replying to a question form Beiersdorf, Cita-Sironi and Moberly stated that there are about 8 MRCs and Austin added that the meeting that MRC curators are trying to plan for the fall will address the issue of usage.

Before proceeding with the next report, Heinrichs introduced N. Bogdanov of the USSR, who had just arrived.

SSP

Watkins reported that SSP had expressed concern that the site survey data at HD were inadequate to establish objectives and drilling sites. SSP would also like to see wider distribution of site survey guidelines. Austin reported that these would be in the next issue of the *JOIDES Journal*. Watkins continued, noting that they should also be sent to proponents with acknowledgement letters and Austin said that this will also happen. SSP felt that single-channel seismic data are insufficient for evaluation of basement objectives in the Cretaceous guyots component of the A&G program. SSP felt that NARM-DPG had not clearly defined a drilling program, and is concerned about the amount of time available to define such a program. SSP feels that the new site at Detroit Seamount (NPT, Leg 145) is poorly defined and requires location and data. With reference to an equatorial Atlantic proposal, SSP reiterated that their guidelines require MCS for penetration greater that 1000 mbsf.

SSP is also concerned about the short time available for the safety review of supplemental science proposals, and recommends allowing at least thirty days for mail review.

Discussion

Natland said that when single channel data are used in conjunction with Seabeam and dredging results for the A&G program, basement picks are clear. Lancelot stated that good seismic data are required for NPT and that PCOM should recommend their acquisition.

Referring to SSP comments on HD, Austin said that SSP had treated their guidelines intransigently. PCOM is not required to take all the recommendations of its advisory panels. Proposal submission guidelines, including site survey guidelines, will be published in the next issue of the *JOIDES Journal*. Copies of the guidelines will also accompany acknowledgement letters to proponents. Austin stated that he believes that a data synthesis will be available for HD prior to drilling, especially if it proves to be Leg 147. There will be no MCS data, though available near-bottom information should permit initial siting. Lancelot noted that if HD is Leg 147, there may be an additional French cruise before drilling.

Austin pointed out that the results of Leg 137 will soon be available, and that PCOM will have to decide how it will decide whether Leg 140 will be Hole 504B or HD. Responding to Moberly, Austin said that this would involve deciding on what constituted a returnable hole at 504B. Austin stated that he had informed Kidd, the SSP chairperson, that he would accommodate a meeting of a subset of SSP together with HD co-chiefs, but that SSP had preferred to let the matter go on immediately to safety review. Malpas reported that the Canadian member of SSP had gone so far as to threaten to resign unless a written reply to SSP's objections was forthcoming from PCOM. PCOM was not sympathetic to this demand. Lancelot said that there was a need to demonstrate that MCS data would be helpful at HD, but Austin pointed out that a US proposal for MCS data collection at HD had been turned down by NSF because of steep topography in the area.

Duncan said that there are two perspectives: SSP has in mind the long-term program, but there is enough information available now to proceed with the first leg. Cita-Sironi reported that the ESF member of SSP had told her that SSP "lived with the ghost of Leg 118", viewed as SSP's worst performance, when the *JOIDES Resolution* conducted the site survey. Austin responded that the site survey work for Leg 118 had been good, but that the vessel had been unable to drill the designated sites. Austin replied to a question from Natland, noting that SSP will submit revised guidelines for review. These could be circulated to PCOM, but this would have to be done quickly to ensure that the guidelines could still appear in the *JOIDES Journal*. Austin had informed SSP that their role is advisory and that they do not possess veto power. Duncan pointed to the conflict between SSP, who wanted an MCS survey at HD, and the NSF reviewers who felt that such a survey would be worthless. Watkins stated that MCS is not the issue. The concern is that there are insufficient data to evaluate two competing tectonic models. Austin restated that he believed that a synthesis of available data will be sufficient for the first part of a long-term HD program.

PPSP

Austin reported that PPSP had not met since the last PCOM meeting. PPSP will discuss safety aspects of Sedimented Ridges (SR), Chile Triple Junction (CTJ) and East Pacific Rise (EPR) legs at its meeting in May. PPSP chairperson Ball feels that PPSP could review a HD synthesis package by mail, though this will be unnecessary if HD is Leg 147. Austin might not be attending the PPSP meeting, because it conflicts with a planned trip to the USSR. He requested that, in that event, Moberly serve as PCOM liaison to the May PPSP meeting. Moberly agreed to do so.

TEDCOM

Natland reported that TEDCOM had not met since the last PCOM meeting. TEDCOM's next scheduled meeting will be in San Diego in July and will coincide with the visit of the *JOIDES Resolution* to California and include a tour of the ship. TEDCOM chairperson Sparks had thought that it might be necessary to move the meeting forward if DCS Phase III development proceeded faster than expected, but this had not occurred. Austin noted that information on deep drilling sites had been provided by TECP. LITHP and SGPP are also working on candidate deep sites for TEDCOM consideration.

LITHP

Natland stated that LITHP had discussed DCS II and III development and recommends that a group evaluate the wireline packer. Other LITHP recommendations were that a petrologist be added to the NARM-DPG, and that orientation of basement cores for paleolatitude determination, or the use of a downhole magnetometer, is important at A&G sites. LITHP also recommended that the EPR engineering leg (142) switch to an on-axis site, where the observed rubble zone is thinner. A site on a ponded flow has recently been identified based on observations from the submersible *Alvin*. Two guidebases will be carried on Leg 142 and a new diamond core barrel (DCB) will be evaluated. LITHP felt that PCOM had missed an opportunity in not setting up an Offset Drilling Working Group (OD-WG). LITHP minutes (Agenda Book white pages 235) contain further details of these recommendations and on proposal reviews.

Discussion

Austin said that the issue of an OD-WG, or OD-DPG, would be discussed later in the meeting. Malpas asked whether there was any news about clearances for the Red Sea. Heinrichs said that no further information was available, but that such clearance was expected to be refused. Francis noted that LITHP have requested that an ODP-TAMU engineer attend each meeting, but that this would be a drain on manpower, especially if meetings are in locations such as Cyprus. Austin explained that the next LITHP meeting will be held jointly with TECP and that the proposed venue is Cyprus. He added that it might be beneficial for an engineer to attend joint thematic panel meetings. However, although LITHP feels that this is important, they should not expect an engineer at every meeting.

OHP

Duncan explained that one of OHP's tasks had been to act as a DPG by devising a NPT leg (145). NPT involves a number of paleoclimate and basement objectives. OHP eliminated NW-3, one of two deep central Pacific sites. NW-4 was thought to be of higher priority. NW-1 was retained. Basement penetration was eliminated at DS-2 and a fourth DS site was added to maximize Neogene high-resolution transect objectives. Penetration to basement was retained at DS-1 and DS-3. (Original and revised drilling plans are presented in the OHP minutes, Agenda Book white pages 296 - 297.) The final plan involves 39.7 drilling days and 20.3 transit days. Austin stressed the need to nominate co-chiefs for this leg.

SGPP

Moberly referred to the SGPP minutes (Agenda Book white pages 305). The meeting began with a workshop on Gas Hydrates and Ocean Drilling. The workshop influenced much of the meeting and influenced subsequent panel rankings (e.g., a generic gas hydrates leg was ranked first). Engineering concerns discussed included sampling of hydrates and fluids, packers, and sand recovery. One supplemental science proposal was reviewed, but it had been written before proponents knew of the four-day limit imposed by PCOM at its Fall 1990 meeting. Austin interjected that it had not been his intention to discuss supplemental science proposals until August, but that PCOM could choose to do so.

Discussion

Natland introduced a the Clathrate Study System Progress Report, by G. Brass and M. Kastner, which was subsequently distributed at the meeting. The system is under development at the University of Miami.

Austin asked if there had been any discussion at the SGPP meeting on how to publicize results of the gas hydrates workshop. Moberly replied that, to his knowledge, there had been no such discussion. Austin emphasized the need to publicize such workshops and feed their recommendations into the planning process. Kappel said that USSAC workshops are summarized in the USSAC Newsletter; workshop reports are also available through JOI, Inc. Austin, however, noted that the workshops in question were not JOI-USSAC meetings, and PCOM should consider how to publicize their findings, e.g., in the *JOIDES Journal*. Cita-Sironi asked how many *JOIDES Journals* are distributed. Kappel replied that the number was about 2500. Responding to Austin, Moberly said that the gas hydrates issue will feed into the rewrite of PPSP safety guidelines, which will also appear in the *JOIDES Journal*.

TECP

Tucholke explained that TECP discussed a number of draft documents they have been preparing on proposal presentation and review processes, tectonics of mid-ocean ridges, and a checklist for the tectonic content of proposals. Austin said that the proposal guidelines will be re-published in the *JOIDES Journal* and that the TECP checklist may also be published. Tucholke continued, noting that TECP has created model deep drilling sites to feed to ODP-TAMU and TEDCOM. One site involves 2300 m penetration (6300 m string) in the Newfoundland Basin, and is considered achievable with the present system within 0.75 leg. The site would test the ship's present capabilities; the other is a deep basement (1700 m sediment and 1800 m basement penetration, 8680 m string) site on the Galicia margin, considered beyond the capabilities of the *JOIDES Resolution*.

TECP concerns include the lack of sufficient drilling time at CTJ (Leg 141). TECP recommended extending the leg by four to six days. TECP also expressed concern about the balancing of cross-sections at HD. TECP is trying to deal with twelve major themes, none of which are prioritized, and is therefore reviewing a large number of proposals. TECP did assign watchdogs to its themes, and suggested that inactive proposals be dropped from the system after three years.

Discussion

Austin said that the JOIDES Office plans to review the proposal list to assess its complexity, i.e., define which proposals have been drilled, which others have not, etc. PCOM could defer discussion of this to the August meeting, when this information will be available. Larson said that he believed that there used to be a policy that, once the drillship had left an area, the proposals for that area became null and void and resubmission was required to demonstrate the intent of the proponents. Austin asked whether PCOM endorsed a time limit for proposals. He cautioned that ODP had changed since Larson was PCOM chairperson and was now thematic and not regional. Tucholke felt that consideration of a cut-off date would be worthwhile. Leinen suggested that proposals be dropped because of: 1.) low global ranking and 2.) lack of continued interest by proponents. Moberly suggested that all proposals be dropped that have been in the system for more than three years. Malpas said that proponents of old proposals should be encouraged to re-submit, since the ship may be coming back into their areas in the next four years. Leinen, however, pointed out that this would conflict with the thematic emphasis of ODP. Austin recommended that PCOM defer a decision until the JOIDES Office had carried out its proposed analysis. The matter could be placed on the agenda for the August meeting. Moberly recalled a graph by Scholl for USSAC, showing proposals received per month, which might indicate a natural cut-off. In response to a request from Austin, Kappel said that she could provide the JOIDES Office with a copy.

Tucholke replied to a question from Duncan that TECP had not been specific as to how to carry out the HD (tectonic) leg. Austin said that TECP will submit RFPs to *EOS* for two themes without proposals, adding that TECP will also find proponents for the HD (tectonic) proposal, or produce a proposal as a panel. Cowan stated that balanced cross sections cannot be produced if the pre-deformation configuration is unknown, as is true at HD. Tucholke replied that TECP has made the point that it should be possible to achieve balanced cross sections by making reasonable assumptions.

894 SPECIAL REPORTS THAT WILL INFLUENCE THE PLANNING OF THE IMMEDIATE FUTURE

A&G-DPG

Rea reported that the A&G-DPG meeting began with presentations of the two candidate proposals by proponents Winterer and Duennebier (see A&G-DPG report, Agenda Book white pages 368). By the end of the first day, complete agreement had been reached on site priorities. "Huevo" and MIT(E) are to be the only sites of deep penetration to basement. The two proposed legs are summarized in the DPG report. Leg 143 is from Honolulu to Majro and Leg 144 from Majro to Yokohama.

Rea discussed the question of recovery. At Bougainville Guyot (Leg 134), the recovery rate was only 5% at a site near the guyot center. However, much can be achieved, even with such a low recovery of core, in conjunction with logs. It was the opinion of the A&G-DPG that recovery rates would be better near the back reef, where diagenesis was more advanced. Most sites in the A&G legs are, therefore, in the backreef area, except those devoted to pelagic caps.

Discussion

Responding to a question from Tucholke, Rea said that sea level history should be decipherable even if recovery rates are low, when cores are related to logs. The seismic signal is lost in the reef itself so that nothing could be gained by drilling there. Austin added that in the reef, only benthic forams would be available, limiting stratigraphic interpretation. Langseth asked about the distribution of recovery. Rea replied that there was generally a little in each core, rather than occasional full cores. Francis noted that the schedule left little time before the first site of Leg 144 and only one day after the last site of Leg 143. Some time would be needed before returning to port to shut down the ship's computers and prepare for the next leg.

Rea stated that sixteen people had attended the A&G-DPG, although only five were in the original group. He was also concerned that G. Foss of ODP-TAMU had been unable to attend. Rea was concerned about the number of attendees making the decision-making process difficult. Only ten people had attended the NAAG-DPG. Rea, therefore, suggested limiting the number of attendees at DPGs. The A&G-DPG had nevertheless gone well. Austin said that PCOM would address the issue of limiting DPG attendance later in the meeting.

NAAG-DPG

The NAAG-DPG report was distributed at the meeting (see also Appendix 4). Leinen, the PCOM liaison, said that the NAAG-DPG objectives had been: 1.) tectonics of ridges in the region, and their importance in opening up flow paths, and 2.) origins of water masses. The proposed drilling is distributed between a northern gateways region, the Greenland margin, a Greenland-Norway transect, and a southern gateways region (Appendix 4). Holes will be double APC cored, with triple coring in important zones.

NAAG-DPG recommended two legs because of the large array of sites and also because of weather constraints. Site YERM 5 is only possible in a particularly good year for ice. NAAG-DPG also produced a fall-back, single-leg program. Both legs require an August to September weather window for minimum ice cover. Ice forecasting and surveillance will be required and an ice support vessel should be present while drilling, especially for the northern sites. Francis said that ODP-TAMU is exploring the ice situation with P. Wadhams of the Scott Polar Research Institute, Cambridge, and Torgny Vinje of Norsk Polarinstitut. Costs will be available for the Annual PCOM Meeting. Francis anticipated more problems than were encountered in the Weddell Sea, because Arctic ice fronts move quickly in response to wind.

Tucholke said that he would feel more comfortable if core control and magnetics were available for basement sites. OHP should consider this. In response to a question from Cita-Sironi, Tucholke said that tentative NARM sites are not close to NAAG sites.

NARM-DPG

The NARM-DPG report was distributed at the meeting (see also Appendix 5). Tucholke, the PCOM liaison, began by noting that he is a proponent, but that he would endeavor to be fair and would not answer questions on his proposal. Austin pointed out that five PCOM members are proponents and that PCOM will have to discuss this issue before choosing the four-year general direction of the drilling vessel in the fall. Tucholke went on to say that the purpose of the NARM-DPG was to produce a preliminary, but relatively complete, science and drilling plan to cover important processes of rifted margin formation. The study is focussed on the

North Atlantic. NARM-DPG has met once. Requirements of the second meeting are to produce concrete drilling plans, provide advice on additional surveys, integrate additional proposals, specify more completely longer-term priorities, and generate a prospectus synthesizing all input (including thematic panels and SSP).

The two top priority transects (both conjugate margins) are Newfoundland Basin - Iberia Abyssal Plain (non-volcanic) and Southeast Greenland - Hatton Bank, with one Voring Plateau site (volcanic). A long-term priority is to drill the deep detachment on the Galicia margin (S-reflector). Approximately 500 m penetration of seaward-dipping reflectors (SDRs), below about 1000 m of sediment, is desired. Responding to a question from Cita-Sironi, Leinen said that bottom currents are strong in the region (as high as three knots in the Denmark Strait) and sites are, therefore, not located on crests of ridges. Tucholke said that two to three legs will be required for the Southeast Greenland - Hatton Bank transect. The Newfoundland Basin - Iberia Abyssal Plain transect will require a minimum of 148 drilling days. One proposed site involves 2500 m penetration, deeper than any site drilled so far by ODP.

Discussion

In response to a question from Natland, Tucholke said that as yet unreviewed proposals include hotspot-type proposals and that they would, therefore, still have to be included in the NARM-DPG report. However, NARM-DPG should not go back to the beginning at its second meeting. Austin said that PCOM must decide how to deal with the new proposals. Most have not been highly ranked, though there is a tendency for the panels to assume that NARM-DPG will consider the proposals and the panels are, therefore, reluctant to rank them. Lancelot commented that the Newfoundland Basin seismics are not very good. Austin said that there are plans to collect more seismic data, but that he did not think that the existing data can be improved. Responding to Natland, Tucholke said that the NARM program will require a total of six to seven legs. Natland suggested that the legs be placed in a prioritized sequence. Austin replied that NARM-DPG intends to do this.

Austin said that he supported a second meeting of NARM-DPG and asked how the new proposals should be handled. Malpas suggested that NARM-DPG should consider the six new proposals. Austin asked whether there should be a deadline for further proposals. Malpas said that to have two meetings was not setting a precedent and did not involve a longstanding commitment. Natland agreed that NARM-DPG should meet again and should look at the six new proposals. If more proposals come in, then NARM-DPG could meet again if PCOM wishes it. Austin replied that the plan at the moment is that the second meeting will be the last and that a report will be produced before the Annual PCOM Meeting. Blum said that LITHP has ranked the new proposals highly because they are interested in the hotspot question. PCOM should give LITHP a response to their signal.

Blum added that the present chair of NARM-DPG is a proponent of two proposals and that this might cause problems. Tucholke responded that DPGs are composed of proponents and he felt that Larsen behaved impartially at the first meeting. Austin emphasized that Larsen was the chairperson and NARM-DPG would be considering new proposals, of which he is a proponent. Watkins and Lancelot said that this would look bad, but Duncan noted that the proposals have, however, been ranked highly. Austin expressed the view that changing the chairperson at this stage would result in a loss of momentum, but Leinen feared that the present situation could be perceived as representing a return to an "old boys' club". Malpas suggested appointing a co-chair. Austin said that both the NARM-DPG chairperson and LITHP have requested that NARM-DPG be augmented with petrologists and that he will do that unless

PCOM objects. Cita-Sironi supported the idea of a co-chair. Austin said that he could appoint a co-chair and that Larsen will leave the room when his proposals are being discussed. Tucholke reiterated that DPGs are made up of proponents and that it would be wrong to penalize Larsen for being the chairperson. Austin pointed out that the NARM-DPG report will supplant the proposals, which will cease to be a part of the system. He asked if he should suggest a co-chair. Beiersdorf felt that the other proponents will "keep an eye on" Larsen. Austin stated that Larsen has been very fair so far. Watkins said that it looks bad and that a different chair should be appointed; Larsen can still sit in. Moberly felt that this issue was only a problem because it involved, potentially, seven legs. Malpas commented that readers of the minutes will be aware that PCOM was concerned about this matter. Austin said that he felt that the consensus was in favor of a second meeting, at which a second group of proposals would be evaluated. There is concern among PCOM that Larsen is a proponent and suggested that PCOM nominate at least a co-chair, adding that this is the most ambitious of the DPGs. A co-chair would help with the workload. Several nominations for co-chairs were suggested by PCOM, in priority order. Austin promised to get a co-chair from that list.

SL-WG

The Agenda Book contains a summary letter and abbreviated report (Agenda Book white pages 381). A further summary was circulated at the meeting, and further information is included in Appendix 6.

Crevello outlined the organization of the SL-WG and noted that he was reporting on the first of at least two meetings. SL-WG had concluded that there is a need for more sea-level proposals, which would have to be submitted before August to get into the review system in time for the first year of Atlantic drilling. The sea level problem is complicated by the lack of a reference datum, interference from other signals, and time lags. In addition, determination of amplitudes involves assumptions. Transects of holes are required for the sequence approach, because the geometry of sequences is such that some elements are missing at individual sites. SL-WG proposed focussing on three time intervals: Neogene ("ice house"), Cretaceous "(hot house") and Paleogene ("doubt house"). One problem related to drilling transects on continental margins involves the need to drill in shallow water. One existing proposal (the New Jersey Margin) also requires the drilling of holes on land to recover the landward ends of sequences. Supplemental drilling platforms are, therefore, required. Austin interjected that this may be one way to spend the additional $2.1M from NSF.

Crevello stated that recovery in carbonates was a further concern. Recovery rate had been <10% on Leg 133. In contrast, drilling in the Bahamas by R. Ginsburg (Miami), using a jack-up platform and a DCS, had recently achieved an average recovery rate of ~80%. This drilling cost ~$1M for two holes. A draft of the SL-WG mission statement would be available for discussion at its proposed second meeting in November. Crevello said that he would like to invite two to three additional people as guest speakers, and suggested E. Kaufman and W. Schlager. He was open to further suggestions from PCOM.

Discussion

Langseth asked if there are many places where sequences can be drilled by the *JOIDES Resolution.* Crevello replied that shallow-water drilling appears unavoidable, and that he was not aware of alternative sites. Responding to Lancelot, Crevello said that ~500 ft of penetration is required off New Jersey. Lancelot stated that a French barge, based at Muroroa, could be used at low cost. It is operated by the French nuclear agency. Francis said that anchoring the

JOIDES Resolution is out of the question. It would cost $8-10M to add the necessary winches to maintain tension. The shallowest water in which the *JOIDES Resolution* can drill in DP mode, in very favorable weather and with no swell, is ~60 m.

Crevello said that drilling off New Jersey may encounter sands, leading to further recovery problems. Swart said that the jack-up platform used in the Bahamas had cost $350,000 for six weeks. Cita-Sironi asked whether the SL-WG saw the need for the *JOIDES Resolution.* Crevello replied that it did because holes are also required out in the basins. Austin said that the SL-WG will probably meet again in early November, and that PCOM will decide on SL-WG's continued existence at its Annual Meeting.

895 REPORT OF RECENT DRILLING LEG: 135 (LAU BASIN)

Hawkins began his report by commenting on the good attitude and level of support he had encountered aboard *JOIDES Resolution.* Problems associated with geological evolution of the Lau Basin (Appendix 7) are: nature and age of the back-arc basin, timing and mechanisms of basin extension, sub-basin filling and sediment provenance, relationship between arc and back-arc magmatism (coeval or episodic), nature and age of the forearc crust (arc, oceanic or forearc), and uplift and subsidence history (e.g., nature of Horizon A). The Lau Ridge, bounding the Lau Basin at its western edge, is a remnant arc. Parts of it are probably present in the Tonga Ridge, in the forearc, from which it separated to form the Lau Basin. The timing of separation has been proposed to be 2.5 Ma to > 5 Ma (but < 10 Ma).

Hawkins went on to describe the drilling results. At Site 834, a sill was encountered (about 4 Ma), below which was more sediment. A second sill was encountered with an age of about 5 Ma. This was not necessarily the true basement, but provides a minimum age of spreading. To the east, the minimum age encountered (at hole bottoms) decreased to 3.5 Ma and finally to 0.7 Ma near the ridge. (Once again, however, these ages may be of sills and not basement.) These ages conflict with those of seafloor magnetic anomalies, suggesting that the latter are not true magnetic stripes, but represent ponding in grabens. Processed seismic data provided no improvement over raw shipboard data. Two sites were drilled in the forearc and pre-upper Eocene basement was encountered at one.

The style of basin opening appears to be intermediate between seafloor spreading and Basin and Range-type extension. A plot of Ba vs. Zr for Lau Basin basalts shows them to lie partially in the arc field and partially in that of MORB. Glass shard data show that the sediment fill of the basin displays a bimodal provenance pattern. Sediments are predominantly volcaniclastic turbidites. Sedimentation rates were initially rapid, but slowed at ~5 Ma.

At the two forearc sites, the following section was encountered: 1.) a thin (<100 m) carbonate cover; 2.) lower Miocene to upper Pliocene volcaniclastic turbidites, probably derived from the Lau Ridge; 3.) diabase sills in upper Miocene turbidites; 4.) reticulate leached zones in turbidites. Leaching follows bedding planes before branching away, and may represent alteration associated with dewatering; 5.) lower Oligocene shallow-water carbonates with volcanic clasts; 6.) upper Eocene reefal limestone, now subsided to 5600 m below sea level; 7.) high-silica dacite at the bottom of the hole (70 - 80% silica, 1 - 1.5% K_2O). The dacite is quasi-continental, and could derive from Australia via the Lord Howe Rise. This continental fragment has apparently been transported eastward and, because of its 5600 m subsidence, its root has evidently been removed.

Discussions

Moberly asked about logging, and Hawkins replied that all but two holes had been logged, including a chemical log at the last site. In reply to a question on tectonic aspects from Duncan, Hawkins said that the effects of collision with the Louisville Ridge had not been observed. Replying to Austin regarding seismic data, Hawkins said that seismic data had been useful for the study of the sediment cover, but not for seeing basement. The reason for drilling in the forearc was to penetrate Horizon A, which turned out to be a diagenetic front and not a depositional or tectonic feature. Cita-Sironi asked about the thickness of the reticulated leached intervals, and Hawkins answered that they are 50 - 100 m thick. In reply to Watkins, Hawkins said that the XRD and XRF systems had only a single operator and long delays were encountered in obtaining analyses. The analyses were excellent, but a second operator should be available to ensure 24-hour operation. It was not possible to run the XRD and XRF concurrently. Swart commented that scientists can run the XRD. Austin said that this topic will be discussed later in the meeting under technical staffing. Lancelot said that the reticulate structures are reminiscent of gas escape structures, formed by the escape of dissolved clathrate. Hawkins replied that there had been some concern about hydrocarbons in the forearc, but that very little methane had been encountered.

896 REPORT OF RECENT DRILLING LEG: 136 (OSN-1 OFF HAWAII) AND RELATED ENGINEERING DEVELOPMENTS

Dziewonski explained that the primary purpose of the leg had been to drill a hole to be used for future experiments with a broad-band seismometer. Additional goals were to test the borehole seal and to investigate deposition of volcanic ash from Hawaii. The site had to be located close to an island to enable noise comparison between an ocean bottom seismometer site and an island seismometer site.

At Site 842, the hole collapsed, though most of the sediment recovery was obtained at this site. Hole problems resulted in a move to Site 843. The average sediment accumulation rate was 3.8 m/m.y. Standard logging was carried out in both sediments and basement. In addition, the FMS, BHTV and geochemical logs were run in basement. Approximately 70 m of basement penetration was achieved.

A smooth borehole wall is required for seismometer deployment, and the caliper log showed only two 10 m intervals that were suitable. The seismometer is about 5 m long. Unfortunately, no seismometer was available for deployment. The indications from Japanese work are that, in addition to covering new regions, such seismometers will record data never previously observed. Dziewonski added that the Ocean Seismic Network (OSN) is an international project. Large regions, especially south of the equator, are outside seismometer coverage. The seismometers in question are for the study of long-wavelength, earth-scale motions. The Federation of Digital Seismic Networks (FDSN) may submit a general proposal this year for future OSN sites. Dziewonski urged the appointment of an additional person from each of FDSN and ODP to broaden the international base of the liaison group. In reply to a question from Duncan, Dziewonski said that the seismic experiment should start within a year. NSF funding is being sought, then a DPS ship will be required for deployment of the instrument.

Engineering Developments

Francis described engineering developments during Leg 136. A new bit was tested: the whirl-resistant poly-crystalline diamond compact (PDC) bit (Appendix 8). PDC bits have replaced roller cone bits in industry for soft formations, but wear out in hard rocks. Rapid wear in hard rocks is believed to be the result of the bit not rotating about its axis. The bit tested is a new design for hard rocks (basalt). Little time was available for coring. Three cores were obtained with the PDC and one with a RCB. The RCB achieved good recovery in basalt, but its penetration rate was low. The PDC penetrated faster but with poorer recovery. Responding to Natland, Francis said that he was not sure whether the basalt was fractured or massive. The PDC bit cost $15,000, compared to $5,000 for a RCB.

Also tested was the "cork" or borehole seal. A reentry cone is used that has a groove in its casing to allow the cork to latch (Appendix 8). One or two joints of pipe are used as a stinger below the cork. When the pipe is in the hole, the thermistor and data logger are lowered and the cork set. Cork retrieval is difficult because the inverted cone used to catch the top of the tool is only about 1 m in diameter. A jet system allows the drill string to be steered so that the tool can be latched. Francis showed a video of this operation being carried out on Leg 136.

Discussion

Austin said that DMP had expressed concern that three borehole seals may not be available for Leg 139. Francis replied that two more seals are under construction. He added that the ODP-TAMU end of the cork project is under control, but the data logger and thermistor string for the cork are not being developed at ODP. It may be a "close-run thing" to get all the gear ready. Lancelot asked about the plans for installing seals, noting that if a hole is sealed, use of the NADIA shuttle and submersible reentry will be precluded. Moberly said that the use of seals will be planned and not random. Francis added that the original proposal was for six corks, three of which were for use on Leg 139. There had been a plan to use one on Leg 142, but this had been dropped. The next leg to use corks would be Cascadia (CA, Leg 146). Francis commended T. Pettigrew, project engineer for the cork, for doing a very good job.

897 THEMATIC RANKINGS OF PROGRAMS

Austin referred to summaries of the global ranking of proposals by thematic panels in the Agenda Book (blue pages 14 and 15). He explained the map, prepared by the JOIDES Office, showing highly-ranked proposals, which was both displayed and distributed at the meeting. TECP ranked a few generic programs which do not have specific locations. SGPP also ranked a generic gas hydrate leg. (It is shown off Peru on the map but will not necessarily be located there.) Austin asked PCOM liaisons to summarize thematic panel activities.

LITHP

Natland said that LITHP divided proposals into themes. There was some ranking of composite programs: e.g., volcanic rifted margins were considered as a group, as were non-volcanic rifted margins. There were no proposals for some themes, e.g., targets for deep crustal drilling. LITHP considers this important but did not vote on it. Proponents did not vote on their proposals. HD was the clear winner.

After the vote, Natland asked why some highly-ranked proposals were not on the list, e.g., a geochemical reference site, or a return to Hole 735B. The answer was that about 2/3 of panel membership had changed since these proposals were last discussed. Many panel members have not read older proposals and this influences ranking, which is, therefore, not truly global. Lancelot said that it is important to keep programs that require a long lead time in mind. This is especially important if engineering development is required, so that such work is not wasted. Natland reported that LITHP had wanted him to point out that offset drilling ranks highly. If offset drilling proposals were ranked as a program analogous to NARM, they would rank higher still.

Austin said that another reason why rankings may not be truly global is the perception that the ship will not be visiting certain regions. In the rankings on Agenda Book blue pages, p. 14, DPG reports have been included even when the report is not final. Furthermore, though LITHP ranked non-volcanic and volcanic margins separately, the DPG report will ultimately replace those proposals. Austin highlighted Lancelot's comment that corporate memory must be maintained, noting that the JOIDES Office rotates, too. Tucholke said that dropping proposals, as discussed earlier, would help; in addition, watchdogs should ensure that proposals are kept to the fore. Malpas suggested asking the panels to explain why previously highly-ranked proposals have moved down their ranking list.

Austin commented that panels now want to defer some of the review process to the DPGs. Panels must rank proposals, however, because DPGs should receive only highly-ranked proposals. Langseth said that formation of a DPG is an acknowledgement that the program is going to be a drilling target, and suggested that associated proposals be removed from the ranking process. Austin felt that programs should have to justify themselves, however. Malpas said that only the top five or ten programs need be ranked. Moberly supported Tucholke's suggestion that some proposals be dropped from the system. Langseth stated that it was natural that a proposal would drop out of a panel's consciousness when prospects of the ship going to an area are low. HD ranks highly because the ship is there, he added. Blum pointed out that panels had asked the JOIDES Office about which proposals they should rank, but each JOIDES Office only exists for two years and does not have a basis for such a judgement. Austin reiterated that the JOIDES Office will provide a list tracking proposals by the August PCOM meeting, which may let some proposals fall out naturally from future panel consideration.

OHP

Duncan explained that OHP divided proposals between five themes (Agenda Book white pages 299 - 300). Proposals were first prioritized within themes without proponents in the room. Then OHP voted on the five first place proposals, with subsequent votes on the remaining five top-ranked proposals. OHP produced a list of twelve ranked proposals. Proponents were allowed to vote, because if a proposal remained at the top of its theme for a number of voting rounds, a proponent would be excluded for some time. Proponents left if voting was close enough to be influenced by the proponent's vote. In response to a question from Austin, Duncan said that he felt that this system had been fair. Duncan added that OHP now has a better balance between Neogene and pre-Neogene specialists. Replying to a question from Leinen about the mix of old and new proposals in the ranking, Duncan said that Shatsky Rise and Bering Sea were the only old proposals. OHP had predominantly looked at new proposals, but there is some memory of older proposals.

SGPP

Moberly reported that SGPP considers itself a new panel, so it did not consider old proposals. Proponents left the room during discussions and voting. The two highest-ranked proposals, gas hydrates and Mediterranean sapropels, are essentially generic, the latter because it lacks specific sites. SGPP recommends that a gas hydrates leg should take place after CTJ and CA drilling, and the sampling equipment should also be ready. SGPP ranked the Oregon accretionary complex, but this should have been CA, since the CA-DPG report has replaced the proposal. Austin and Blum explained that this is the JOIDES Office position, but that panels sometimes differ and, in this case, SGPP has returned to one of the original, pre-DPG proposals. Moberly said that one histogram on the global ranking map should cover both programs, adding that this might also apply to the southeast Atlantic upwelling and Benguela proposals, which OHP would like to combine. Swart acknowledged that the Mediterranean sapropels proposal is immature, but SGPP wanted to express its support.

TECP

Tucholke said that TECP looked at new proposals first, then selected watchdogs for themes. Watchdogs looked through the proposal list, so that all proposals were considered, though the procedure may have yielded spotty results. All panel members voted on the top twenty proposals, but proponents left during discussion. Proponents voted, but when votes were tallied, their votes were subtracted. NARM was ranked first (Agenda Book blue pages 14). The second-ranked proposal (Alboran Basin) is somewhat generic (immature). Two of three new panel members have a strong interest in the Mediterranean. The fifth-ranked proposal is for a second leg at HD, oriented toward tectonic objectives. This is also generic, since no proposal exists. Barbados ranked lower than previously because Westbrook has rotated off TECP. The Galicia S-reflector will not be drillable in the near future.

Taira observed that collision processes have been a long-standing interest of TECP. He asked whether there had been any discussion of strategies to tackle this problem. Tucholke said that there had been no such discussion. In response to a question from Cowan, Tucholke said that Cascadia II slipped in the ranking.

898 SETTING THE GENERAL DIRECTION OF THE DRILLING VESSEL TO SPRING 1995

Austin felt that PCOM should set the general direction of the drilling vessel for the next four years before considering engineering priorities, since scientific priorities should guide engineering priorities. He referred to Agenda Book blue pages 19 for factors to be considered in formulating the plan: balance among scientific themes, efficiency (drilling vs. transit time), temporal aspects, and objectives of COSODs I and II and the LRP. Austin presented a JOIDES Office straw motion (Agenda Book blue pages 19). He stressed the importance of this year's plan, because NSF will be asking for a four-year plan in the next few months.

Austin pointed out that there were five proponents of ranked proposals on PCOM, and proposed that they leave the room so that PCOM could be seen to be impartial in setting the four-year plan. He added that he had already asked Leinen to lead the discussion in the event that this suggestion was adopted. Even if proponents left, a quorum would be maintained. He asked for discussion.

Natland observed that PCOM members differ from normal panel members because they represent their institutions, adding that requiring PCOM members to leave might generate comments at their home institutions. Austin acknowledged that there might be comment if proponents leave, but felt that there would be even more discussion if they do not. In response to a question from Malpas, Austin said that the balance between US and non-US members would be preserved if proponents left. Austin added that this issue had been discussed at the last (Hawaii) PCOM meeting, when it was realized that the option of proponents remaining in the room but not participating in the discussion was unworkable, since they are invariably asked questions. This would be an experiment. During PCOM voting, proponents would be classified as absent. Austin reiterated that the JOIDES Office will perform a statistical survey of proposals before PCOM discusses which remain active, probably at its August meeting. PCOM may then wish to provide more instruction on ranking to thematic panels.

At this point, the five proponents on PCOM left the room. Leinen assumed the role of chairperson.

Leinen again presented the JOIDES Office straw motion on the four-year direction of the drilling vessel. She asked if PCOM could assume a consensus on sections 1 and 2 of the straw motion. Moberly added the caveat that there may be supplemental science in FY92, and that the FY92 schedule might, therefore, be modified in August. The motion was altered to this effect.

Francis noted that Austin had asked that the ship be brought to the Atlantic before the end of January, 1993. Leinen called for discussion of section 3 of the straw motion. Consensus approval was given to section 3 as written (but see below). Leinen moved on to section 4 of the straw motion. Moberly proposed that the section refer simply to "the Atlantic", without geographical constraints, this region to include the Mediterranean. Francis pointed out that between November 1993 and November 1994 the *JOIDES Resolution* must spend ten days in dry dock. Lisbon is a favored location, but South American ports would be less favorable. Malpas recommended that the dates in the motion be altered. Section 3 (North Atlantic) should apply until April, 1994. He said that this would be the FY93 program to be finalized at the 1991 Annual PCOM Meeting.

Cowan said that many of the top five panel rankings are not in the Atlantic, and questioned restricting the vessel to the Atlantic. Duncan agreed that the option of transiting the Panama Canal should be maintained, adding that some Pacific sites are closer than South Atlantic sites. Leinen asked whether the flexibility to conduct engineering legs, e.g., at EPR, should be maintained. Lancelot said that such flexibility is necessary, and that PCOM should not set a date for transiting the Panama Canal. Duncan agreed with Lancelot, and stressed the importance of merging an engineering schedule. Leinen, therefore, suggested that the "eastern Pacific" be included in section 4 of the motion. Cowan questioned the emphasis on the Atlantic, when so many highly-ranked proposals are in the Pacific. Malpas replied that more proposals will follow the ship track and that, furthermore, NARM is a multi-leg program. Moberly stated that the North Atlantic proposals all need summer weather and that he would, therefore, like to see two summers dedicated to the North Atlantic. Malpas said that, as written, the motion allowed that option, together with targets for the winter months.

Francis asked where DCS III could be tested, in the event that Leg 147 is not a test of DCS III, but that DCS III is ready by, say, mid-1993. Malpas replied that a test could be performed at TAG. He suggested adding to the motion a note to the effect that, when the final science plan is considered, every effort must be made to consider engineering legs. Francis observed that, if Leg 147 is not an engineering leg, there will be a long gap between engineering legs, perhaps

until April 1994. Leinen suggested a fifth section to the motion concerning PCOM's commitment to engineering development. Moberly asked if eastern Pacific was to be taken to mean anything from Sedimented Ridges to CTJ, rather than simply near the Panama Canal. There was a consensus to this effect. The following motion was passed.

PCOM Motion

PCOM sets the direction of the drilling vessel for the next four years as follows:

1) **In the remainder of FY 91, confirmed as is in the current Program Plan.**
2) **In FY 92, and beyond to January 1993, confirmed as is in the Program Plan approved at its November 1990 meeting in Kailua-Kona, Hawaii, through Leg 147, Engineering EPR (in the event that DCS Phase III is not ready, Hess Deep will be substituted), ending in Panama on or about 21 January 1993. The Program Plan may include up to 10 days of supplemental science as moved at the November 1990 meeting.**
3) **Until April 1994, in the North Atlantic. FY 1993 Program to be finalized in December 1991 at the Annual Meeting of PCOM with Panel Chairs.**
4) **In April 1994 through April 1995, in the general direction of highly ranked proposals in the Atlantic Ocean and adjacent seas and the eastern Pacific.**
5) **PCOM's long-range commitment to engineering development in support of highly ranked thematic objectives must be considered in planning specific cruise tracks.**

PCOM reaffirms its stand that at its spring 1992 meeting, and at subsequent meetings, it will evaluate again the state of panel recommendations, technological developments, and the overall state of the Ocean Drilling Program, and again set the general direction of the drilling vessel for the subsequent four years, with a relatively firm early track and a relatively flexible later direction.

Motion Moberly, second Cowan — Vote: for 11; against 0; abstain 0; absent 5 (proponents of ranked proposals absent)

899 PREPARATION FOR DETAILED PLANNING

Before discussion of engineering matters, Francis gave PCOM an update on Leg 137 (in progress at the time of the meeting). The latest report received (dated April 23) indicated a total depth of 1620 mbsf, no evidence of junk, and the conclusion that the hole is clean. The DCB had been recovered, as it had not been making much hole. Austin commented that PCOM will have to decide a procedure for determining whether the hole should be considered clean, with regard to implications for Leg 140.

Austin introduced preparations for detailed planning. A DCS/Leg 142 status report would be presented first, followed by discussion of none-DCS engineering priorities, following which a motion would be required.

DCS STATUS REPORT

Storms began by noting that Leg 142 (Valparaiso - Honolulu) will be the third engineering leg (Appendix 9). The co-chief (R. Batiza), the EPR-DPG chairperson (E. Davis) and others now prefer drilling an on-axis site, rather than the original off-axis site. A recent *Alvin* cruise (D.

Fornari and others) has identified such a site. Duncan asked whether LITHP had examined this site. Austin replied that Batiza has been in contact with Fornari and Humphris (LITHP chairperson). He added that the move to an on-axis site has been decided: PCOM has been polled, yielding no dissention, and LITHP has endorsed the change. Storms continued, explaining that Leg 142 will comprise about 34 days on site and 13 days in transit. This works to ODP-TAMU's advantage. It was originally feared that all of the equipment would have to be put aboard a leg early. Now, however, while some of the equipment will be installed on the ship on previous legs, the DCS will be put aboard in Valparaiso and rigged up during the transit. There will also be rig-down time at the end of the leg.

Leg 124E was the first engineering leg. Only two weeks were allowed for DCS drilling, but only about 20 hours of operating time and 5 hours of coring time were achieved. On Leg 132E, about 20 hours were spent coring with the DCS and the system made 79.6 m of hole.

The primary goal of Leg 142 is to spend more time actually coring with the DCS. A hard rock guidebase and drill-in-BHA must first be deployed (Appendix 9). If time permits, a new diamond reaming bit may be evaluated, as will a second stage drill-in-BHA system and a new DCB (Appendix 9). ODP-TAMU would like to attempt slimhole logging, especially caliper and temperature logs, then try to ream the 4" hole to 7.25". If there are no problems, logging will proceed with the whole array of standard diameter tools. If hole problems are encountered, the second stage BHA will first be deployed to stabilize the hole.

Pyle asked about the highest permissible temperature for drilling operations. Storms replied that this would be left to the judgement of shipboard personnel. In response to a question from Austin, Storms said that the minimal goal is to drill 100 mbsf with 50% recovery. He did not think that 200 mbsf will be achievable because of the slow pace of DCS drilling and because high temperatures will probably limit drilling depth. The goal is to core with the DCS until something prevents operations. If the DCS reaches 100 mbsf or more, the DCS will have been proved and there would be a switch to reaming and the second stage drill-in-BHA. Francis, referring to Pyle's question about temperatures, said that this matter would be discussed by PPSP. He added that the nearest black smoker is more that 500 m from the proposed site. Storms said that there appears to be 50 to 60 m of rubble at the proposed site, but that temperatures are unknown. Austin commented that Batiza has done a good job of accessing the advisory structure on this site location problem.

Storms listed secondary engineering goals (Appendix 9). A second hard rock guidebase will be on the ship, but there are no plans to use it at present. If everything goes very well, a second guidebase might be set. Specific engineering goals are listed in Appendix 9.

Storms went on to address the status of DCS phases II and III (Appendix 9). Most contracts for DCS II have been awarded and work is in progress. Two significant contracts remain to be awarded: the slingshot safety test and the secondary heave compensator. RFPs have been sent out for DCS III and responses are due by mid-May. ODP-TAMU hopes to have a contractor and preliminary design for DCS III in mid-May in time for TEDCOM. It should then be possible to estimate costs and times, which should be available at the August PCOM meeting.

In reply to questions from Natland and Austin, Storms said that ODP-TAMU plans to proceed with the full-scale slingshot test, which will cost about $150,000. The development schedule could be delayed if the shock system does not function in the test. There would still be time to make modifications before Leg 142, but the system could not be used at sea since SEDCO could not accept it if it failed the test. The test has yet to be scheduled: negotiations with

DRECO are proceeding. Austin said that PCOM will need to know the results of the test before its August meeting. Replying to Tucholke, Storms said that if a redesign is required following a failed test, the system would have to be re-tested. Austin noted that in the event of DCS II failing the slingshot test, it might be necessary to replace Leg 142, e.g., with HD. he added that BCOM supported continued development of DCS II together with the concept of an acceleration of DCS III, but there had been no mention of the consequences of failure of the slingshot test.

NON-DCS ENGINEERING PRIORITIES

Francis said that ODP-TAMU feels that it is advancing on too broad a front and that engineering projects are taking too long. BCOM has expressed the same view. DCS is the largest project and takes most of the personnel. After DCS are a number of smaller projects, each with an engineer. In addition, some legs are consuming engineering manpower, e.g., Leg 139 with its H_2S safety considerations. ODP-TAMU has examined its important projects and concluded that there are insufficient engineering personnel for all of them. ODP-TAMU has also evaluated how its engineers spend their time. They attend meetings, go to sea about once per year, and are involved in operational matters. They spend only 30-35% of their time on development engineering, and this is the reason that ODP-TAMU resists their attendance at meetings. ODP-TAMU would like PCOM either to cut the number of projects or authorize increasing the number of engineers. Francis said that the former appeared more likely. The planning system works well for allocating ship time, but not for coordinating engineering projects because the limited number of engineers has not been appreciated.

Austin said that there had been a feeling, early in ODP, that there were many engineers at ODP-TAMU and that a great deal could be accomplished. There was also a tendency for engineers to refer to equipment as "quasi-operational". Now the engineers are saying "enough" and Austin thought this a good thing. He asked that PCOM be told how manpower is distributed within the list of projects (Appendix 10). Francis, responding to a question from Cita-Sironi, said that there are five project (development) engineers at ODP-TAMU. Austin cautioned that PCOM should bear in mind that some panels have strongly requested specific tools. Storms noted that ODP-TAMU has suggested that panels have at least one meeting per year in College Station, in order to ease the burden on the engineers. This policy has in practice worked against the engineers, as many panels have complied forcing engineers there to attend these meetings.

Storms presented a list of active ODP development engineering projects (Appendix 10). The DCS is the largest project and the first seven items on the list are DCS items. Austin asked how much manpower is involved in the DCS work. Storms replied that DCS work accounts for 2.5 full-time engineers, or 50% of available personnel.

Going down the list, Storms explained that the high temperature and H_2S preparations are for Leg 139. XCB flow control work is aimed at improving XCB performance in some formations. The vibra-percussive corer (VPC) is back with the manufacturer (Novatech of Salt Lake City) for work on corrosion protection. A full-sized version of the VPC has been completed by Novatech, which encountered many of the same problems as the ODP half-scale version. Design changes may be made which will benefit ODP. In response to Austin, Storms said that he did not know the schedule for this work. Austin noted that SGPP has made a strong statement that coring of sands will be needed in FY92. Storms said that the VPC has not been scheduled for any leg. Continuing down the list, Storms said that the MDCB is designed to improve recovery in certain formations and also for use with Geoprops. The sonic core monitor (SCM) needs to be made more durable for use with rotary coring. It is scheduled for

deployment during Leg 141. Hard rock orientation involves scribing and the electronic multishot is also for core orientation.

Natland suggested expanding on tool descriptions for the benefit of visitors from the USSR, but Austin said that such a briefing would have to be deferred. Storms continued with the list, stating that two additional cork systems are being fabricated for Leg 139. Austin said that he understood that parts of the cork system are being developed by third parties and asked who is the outside contact. He expressed concern that ODP is "paying too many pipers". Storms replied that a redesign had to be carried out; the project is now virtually independent of outsiders. ODP-TAMU has agreed to build a second pressure core sampler (PCS), but this will not transfer core under pressure, the latter being part of a phase II PCS. ODP-TAMU does not want to use resources on phase II until use of the tool has been defined. There is no point in studying transfer of cores under pressure when there is currently no chamber to accept the core. SGPP agreed with this stance. Malfait commented that NSF is expecting a proposal for development of a transfer chamber, but that he did not know when it would arrive. Moberly expressed the opinion that phase II is the community's problem and not ODP's. Storms said that ODP-TAMU is building a second stainless steel version of the PCS. Obtaining input on the manifold has also been a problem. Everyone has different ideas. SGPP thinks that ODP-TAMU should coordinate with co-chiefs and geochemists and build a manifold. T. Pettigrew is the engineer in charge. The PCS harpoon is optional; it penetrates the top of the core to obtain a sample from inside the core. Francis noted that it will be necessary to begin development a year in advance if the PCS is needed for Cascadia (Leg 146). Storms said that lead time is always a problem, as is the budget, which is insufficient for construction of titanium PCSs.

The next item on the list is work on XCB cutting shoes. Lancelot asked how the XCB is rated by ODP-TAMU. Storms replied that his feeling is that the XCB has not been fairly judged. The APC had problems early in its development. The XCB was to extend the depth at which piston cores could be obtained from 200 mbsf to 300 mbsf. However, it is now being used to 800 mbsf. It does not recover interlayered hard and soft lithologies, hence the requirement for the MDCB. Storms did not go into details about remaining items on the list, but noted that the TOTCO system and beacon upgrades are low priority items.

In response to a question from Austin, Storms said that ODP-TAMU is over-committed by one to two engineers based on this list alone. Moberly asked whether any of these projects could be subcontracted, but Storms said that they already are. Francis stated that it is important to balance the numbers of in-house engineers versus consultants. He asked that PCOM allow ODP-TAMU to manage this problem, but that PCOM provide ODP-TAMU with a prioritized list of projects. Storms added that some projects lend themselves to the use of consultants, while others do not. Natland asked about the amount of time required by the various projects on the active list. Storms replied that the DCS required most time. Next came XCB flow control, MDCB and SCM, each requiring approximately equal time. Below these came hard rock orientation and electronic multishot, again approximately equal in time consumption. The cork is no longer very time-consuming, and the rest of the list is at a lower level of time consumption. In reply to a question from Beiersdorf, Storms said that ODP-TAMU welcomes visiting engineers, but that they can be a mixed blessing, some being excellent and others costing ODP-TAMU engineers time.

Storms addressed the list of dormant engineering projects, not scheduled for 1991-1992 activity (Appendix 10). Work on the breakaway piston head for the APC ended when a visiting engineer left. Austin commented that SGPP linked this to the VPC, but Storms said that it was erroneous to do so. They are parallel systems; the breakaway piston head will not be used together with the VPC. The breakaway piston head will improve the APC in some lithologies.

The anti-whirl PDC bits drilled well in basalt on Leg 136. Storms replied to a question from Natland by pointing out that if a dormant project becomes relevant to a leg, an engineer would have to be assigned to the project. This may be the case with the mini-HRB (RCB version) for HD.

Storms went on to discuss the list of unscheduled projects (Appendix 10). An engineer will be required for the deep drilling study. The purpose of the powered liner removal system is to reduce disturbance during liner removal

Lancelot said that Storms had presented impressive lists of projects and added that PCOM will not be able to get the items it needs unless it takes action. Austin asked whether it would help if PCOM told ODP-TAMU simply to pursue the active list. Storms replied that it would not, and that, furthermore, with HD in the future, extra projects will be unavoidable. The active list must be trimmed to provide the time necessary to work on contingencies. Austin said that, since the DCS will not be cut, only 2.5 engineers are available for the rest of the list. Lancelot noted that several panels had recommended that an extra systems engineer be provided. Should PCOM not, therefore, consider the option of extra engineers? Cita-Sironi said that the MDCB has not been successful and suggested dropping it. Storms, however, said that ODP-TAMU feels that it is close to becoming a reality: the problems have been identified. While it is not a "sacred cow", dropping it would also impact Geoprops. Leinen said that PCOM must make some choices, but asked whether, if choices were made, this would result in significant progress on the selected items within a year, or whether they would still require three years. Storms said that this is a difficult question and is linked to the issue of legs of opportunity for testing systems. For example, if DCS is not ready for Leg 147, but is ready for Leg 149, time may be lost before there is an appropriate leg for testing. The same applies to other systems. Leinen noted that to some extent this can be predicted. For example, SGPP has stated that the VPC is necessary for FY92, so it is known that the ship will be drilling in sandy environments next year. She asked whether, if PCOM prioritizes developments, it can expect that tools will be in hand for legs on which they are scheduled and that they will be capable of solving problems for which they were designed. Storms said that it is "probably a fair bet" that if the number of projects can be reduced, the chances of remaining tools being on line for legs on which they are scheduled will be increased. Storms added that he could not, however, guarantee that tools would be more likely to function well, e.g., a VPC that vibrates well may still not recover sediment for which it was designed. ODP-TAMU has tried to increase chances of success by adopting more than one approach to each problem. Austin, however, noted that the expectation will be that, if engineering developments are prioritized, success will follow.

Natland asked whether any projects will soon be completed and therefore leave the list. Francis replied the high temperature and H_2S preparations for Leg 139 will only be relevant for one to two more months and that the cork is almost finished. Storms, however, pointed out that the cork requires modification for use with the mini-HRB for EPR. Francis responded that ODP-TAMU might decide to drop any further work on the cork until the results of Leg 139 are known. Storms said that this would release an engineer for other work, e.g., VPC. Langseth agreed that the cork is an experiment and that modifications should not be made until it has been tested. Beiersdorf said that engineering efforts must be focussed to improve efficiency. Jenkyns commented that SGPP has discussed the VPC and the breakaway piston head for coring sands, and asked whether anyone other than J. Pheasant, of BGS, could work on the breakaway piston head. Storms answered that Pheasant had thought he might be able to work on it at the BGS, but this has not been possible to date. Austin commented that it seemed that the international exchange program can be a hindrance as well as a help. The question of how to optimize engineering input to ODP might arise. There is engineering expertise at places other than ODP-TAMU, but it might not be free of charge. In further response to Jenkyns, Storms

added that the breakaway piston head has a problem of premature separation. In reply to a question from Taira concerning the XCB, Storms said that plugging of the ports in the cutting shoes has been a problem in some formations, and ODP-TAMU has long thought that flow control might be the answer. This is now being tried, but design changes are required.

Austin stated that if the XCB could be made to work, it would solve the long-standing problem of recovery of alternating hard and soft formations. Storms agreed that it was very worthwhile. Austin pointed out that 50% of the engineering effort is devoted to the DCS, which is perceived by much of the drilling community as a hard-rock device. Something should be done about sediment recovery. Leinen proposed that the XCB work be made the second priority, after the DCS. She suggested that subsequent prioritization be related to specific leg deadlines, e.g., hard rock orientation for Leg 141, then the VPC (which SGPP requires for several FY92 legs) and MDCB for Leg 146 at CA (which requires the use of Geoprops). In response to Austin, Storms explained that the SCM, hard rock orientation and electronic multishot are linked and should be prioritized together. Austin suggested stopping the cork for evaluation after Leg 139, since it is an experiment. He then asked whether this would comprise a realistic prioritization. Moberly proposed that the PCS also stop at phase I (Leg 139). Storms said that ODP-TAMU would like the flexibility to place MDCB above VPC if need be. Austin agreed that, since fluids will be important in FY92, MDCB is likely to rise above VPC in priority. Francis noted that further land tests of the Geoprops probe are required, but Malfait said that these will be funded. In answer to Swart, Storms said that the second PCS tool construction will not be affected by PCOM prioritization, since it is well advanced. Moberly asked where guidebase preparation would fit in if HD became Leg 140. Storms felt that this would not involve a one-for-one exchange in the prioritized list, since this was not a big job. Austin stated that PCOM would have to allow for sudden changes when it writes a motion to prioritize. Storms said that modifications for HD would be assigned to T. Pettigrew, along with the VPC. He would switch over to HD. Francis thought this level of detailed input to ODP-TAMU was probably unnecessary, however.

Austin asked if PCOM's prioritization had missed any panel priorities. Moberly responded that LITHP will want an engineer to work on the deep drilling study. Austin, however, commented that this will probably not require an engineer full time: the Deep Drilling WG (DD-WG) recommended that panels give deep drilling information to TEDCOM and this would be followed by an iterative process between TEDCOM and ODP-TAMU engineers. Austin has wanted TEDCOM to take the larger role in design for deep drill holes, but they have been reluctant. Natland said that the engineer involved would probably, in any case, be one of the DCS engineers. Duncan asked if there still might be too many items on the list. Austin replied that five priority items are important for FY92 and all should be met. Jarrard stated that a submersible is to be employed to evaluate the data loggers two weeks after Leg 139; it should then be possible to decide whether to proceed with the cork. Austin said that PCOM will receive feedback from panels and may have to modify its list later. Storms stated the need to eliminate or defer one of the major projects, or the engineers would still be stretched too thinly. Malpas responded that a prioritized list does just that. If all projects cannot be accomplished, then the last one on the list should be dropped. Duncan wondered whether an extra engineer might be necessary, if an item cannot be dropped. Austin commented that, to some people, the XCB works, yet it has been made the second priority. In contrast, MDCB may be needed and will generate publicity, yet it is number five or six. Storms, however, said that the XCB also generated publicity, adding that people remember when recovery is low. Moberly commented that Geoprops might be number five in terms of timing. The following motion was presented.

PCOM Motion

PCOM prioritizes engineering development as follows:

1) Improvement and development of the Diamond Coring System.

2) Improvement and development of the XCB Coring System.

After these major priorities, PCOM believes that development should respond to the needs of scheduled legs. This implies that the next priorities are:

3) Cork/PCS/high temperature preparations, in preparation for Leg 139.

4) Orientation needs (hard rock orientation, Sonic Core Monitor, electronic multishot), in preparation for Leg 141.

5) Vibra Percussive Corer, in preparation for scheduled 1992 SGPP objectives

6) Motor Driven Core Barrel, in preparation for the use of GEOPROPS in Cascadia drilling, Leg 146.

Each of these development activities should be reevaluated after testing on the appropriate leg(s).

Other active development efforts should continue on an as-possible basis.

If there are short-term perturbations of the schedule, PCOM assumes that engineering development will respond to the schedule.

PCOM expects reports on the development schedule in the future so that it may reevaluate the priorities.

Motion Leinen, second Natland Vote: for 16; against 0; abstain 0; absent 0

PRIORITIES FOR DOWNHOLE MEASUREMENTS

Jarrard discussed the list of near-term technology developments (Appendix 11). Some developments derive from ODP-LDGO, some from ODP-TAMU, some from third parties and others from combinations of these groups. The flow permeability tool will be used at Sedimented Ridges I, if successful at 504B. Geoprops has been rescheduled to CTJ from Leg 139. Even here, its use depends on MDCB readiness. The status of the 28-element geochemical tool, presently scheduled for Leg 140, is uncertain as it must be borrowed. ARCO has one and a long-term loan is possible. Schlumberger is developing a tool that might be leased in the future. Jarrard would prefer a long-term loan from ARCO. ARCO's tool is a germanium crystal cryogenic tool and must be inserted and removed from the hole quickly in order to maintain superconductivity. The Schlumberger tool is more advanced and is non-cryogenic. The dewared resistivity tool will be discussed with BGS and the Camborne School of Mines during the week following this meeting. Leg 142 reaming has not been scheduled, although it may occur if DCS operations go well.

Regarding future needs, DMP and LITHP have generated a long list of high-temperature tools which require too much development for ODP-LDGO to perform. Four developments that are worth considering are the following: 1.) Core-log integration. This involves making the same measurements both downhole and on core. A core gamma ray instrument and a downhole susceptibility tool are required. 2.) Next-generation geochemical tool. 3.) Maxis, a next-generation data acquisition system that will involve a $200,000 to $300,000 transition cost. 4.) Wireline packer. LITHP and SGPP both want this, but the current tool must be evaluated as it is a high-risk project (Appendix 11). Formation of a group to study wireline sampling systems has been recommended by DMP. Austin added that DMP feels that the present packer is a failure and has requested a meeting to discuss further developments. Swart asserted that ODP needs a capability to sample fluids, whether by the wireline packer or some alternative. The

packer is flawed because it has to expand too much to be able to return to a small enough diameter to re-enter the pipe. A straddle packer (drill stem packer) may be preferable. Jarrard said that there is a British system developed by J. Cann which uses the existing drill stem packer, and this would no doubt be taken up by the DMP specialist group, if PCOM approves such a meeting. Langseth commented that the method to be used is dependent on lithology. Swart pointed out that the oil industry uses straddle packers and suggested that it should be possible to adapt these for lithologies that cannot be squeezed to obtain water samples, e.g., those to be encountered at A&G, where fluids cannot be sampled without some sort of tool.

Austin asked whether PCOM needed to prioritize downhole developments. Langseth suggested the susceptibility tool, for use in core-log integration. Jarrard said that this might be the French susceptibility tool, which it might be possible to combine with other tool strings, but added that it was not certain that Sclumberger would be taking over routine use of this tool. An alternative would be to build a tool that is attached to the bottom of strings at a cost of about $75,000. Natland said that LITHP noted the need for a downhole magnetometer for A&G. Jarrard responded that the Japanese had suggested a tool, and Rea commented that this was for basement sites. Austin stated that a motion would be required if PCOM wished to endorse the use of a susceptibility tool or downhole magnetometer in FY92. Langseth noted that the downhole susceptibility tool is the highest priority, since it is needed for core-log integration. He asked for more information about the French susceptibility tool. Lancelot said that it might be necessary to purchase the tool. He added that it is a Schlumberger tool and, therefore, compatible. It is very sensitive and capable of obtaining good reversal stratigraphies in carbonates. Beiersdorf recalled that there had been a susceptibility tool on Leg 106, but Jarrard said that that was a hard rock tool. The issue is now to develop/acquire a much more sensitive tool for carbonates. The French tool is the only one, to Jarrard's knowledge, completely developed. One could develop a new tool. Another way to gain sensitivity, and resolution (benefitting core-log integration), is by using a pad-type tool, but this is a development and not an existing tool. Lancelot commented that the best vertical resolution by the French susceptibility tool was 50-60 cm. Taira drew attention to DMP's response to the Japanese magnetometer (Agenda Book white pages 93), noting that DMP did not recommend its use at A&G (legs 143 and 144). Austin noted that A&G-DPG had endorsed the use of the Japanese magnetometer (Agenda Book white pages 369). He stated that a PCOM motion was not necessary, since the magnetometer will get incorporated into a leg prospectus anyway, but that PCOM should have a consensus to the effect that it endorses the LITHP (and A&G-DPG) recommendation that three-component magnetometer work be carried out on legs 143 and 144. Langseth prepared a consensus on the susceptibility tool.

PCOM Consensus

PCOM recommends that the highest priority for downhole tool acquisition or development be a sensitive downhole magnetic susceptibility tool.

Ideally, a susceptibility tool that can be incorporated into each tool string should be developed.

In the interim, or alternatively, existing susceptibility tools such as the French magnetometers should be used on Leg 141 and subsequent legs to implement core-log correlation.

NEW DPGs AND WGs

Austin explained that NAAG-DPG and A&G-DPG have met and NARM-DPG will meet again. PCOM must decide whether any new DPGs are required and should charge them and provide

nominations for members. The SL-WG will meet again. PCOM must decide whether any new WGs are required. OHP has recommended a Bering Sea WG (BS-WG) and LITHP has recommended an Offset Drilling WG (OD-WG).

Moberly recommended that PCOM defer action on a BS-WG. Leinen said that DPGs were originally set up when legs had been firmly scheduled, but Austin responded that they are for highly-ranked proposals, when panels need assistance. Swart commented that Bering Sea proposals were not highly ranked, and Austin said that, though the need for a BS-WG may arise in the future, it can be deferred. Duncan reported that OHP felt that the Bering Sea program is a composite of proposals and was also looking forward to future USSR proposals. They, therefore, felt the need for a DPG. Austin responded that a WG, rather than a DPG, is needed for the Bering Sea because it is an area of interest that lacks a strategy or very highly-ranked proposals. He added that WGs generally require more than a single meeting. Natland suggested deferring the BS-WG until some of the anticipated proposals arrive, though Moberly noted that if existing proposals can be improved, there may be no need for new ones. Austin said that, while forming a BS-WG might energize proponents, he preferred to wait.

Austin stated that LITHP and TECP have, through minutes and letters, urged the formation of an OD-WG. In this case, highly ranked proposals are available, but LITHP and TECP assert that no drilling strategy exists, indicating that a WG, rather than a DPG, is required. Watkins asked about the number of proposals. Natland listed OD proposals as: MARK deep mantle, Vema FZ (two proposals) and Oceanographer FZ in the Atlantic, HD in the Pacific, and Hole 735B in the Indian Ocean. Leinen recalled that at the November 1990 Annual PCOM Meeting, there had been no objections to an OD-WG other than a concern that there were too many DPGs and WGs. Austin reported that on the same day he received the LITHP/TECP letter requesting OD-WG, he received a letter from the chair of the US Scientific Advisory Committee stating that travel costs for US panel members are too high. Austin said that he wanted to discuss travel costs with international partners. Malpas said that the international partners are very aware of the high cost of travel, but that the OD-WG has a strong case. Lancelot agreed. Austin then asked whether PCOM favored a WG or DPG, noting that LITHP and TECP prefer a WG, which involves a longer-term commitment. Duncan felt that it should be a WG, and that it must bring together people interested in petrology and structure.

Austin expressed the opinion that an OD-WG should not become a forum for HD discussions. The initial HD leg is well defined. Only future HD, and other, legs should be considered by OD-WG. H. Dick has accepted responsibility for preparations for HD I. In response to a question from Watkins, Natland said that technological aspects of OD are drilling on steep slopes and deep drilling (i.e., 2-3 km penetrations). Austin asked what the role of proposals should be within OD-WG. Natland said that the OD-WG may solicit proposals, like the SL-WG. Responding to a question from Malpas, Duncan said that petrological aspects may need only one meeting, but that TECP concerns may take more time.

Austin presented the suggested mandate for OD-WG he had received from LITHP. Malpas said that reference to the "tectonic context" was redundant since this is covered under the umbrella of "scientific objectives". Moberly recommended dropping the reference to "sites" as being too specific, and replacing it with the term "target area". In addition, engineering developments should be considered.

Austin then showed LITHP's nominations for OD-WG membership. He felt that it would be useful to have petrologic/tectonic co-chairs. TECP nominations were not available, however. The JOIDES Office, in consultation with LITHP and TECP, will obtain names of nominees if

PCOM approves OD-WG. Names were suggested by PCOM. Austin said that it would be useful to obtain more names from the international partners, including the USSR. Austin will try to have OD-WG meet before the August PCOM meeting and will poll PCOM members with a suggested list of members. Natland stressed the importance of considering the balance of disciplines. Austin reiterated that he would poll PCOM on the membership issue. Austin pointed out that the OD-WG will not be prioritizing targets but that it may, however, transition to a DPG in the future. It should therefore meet early. PCOM passed the following motion.

PCOM Motion

PCOM establishes an Offset Drilling Working Group (OD-WG) to be charged with:

a) establishing and setting into priority scientific objectives and a drilling strategy of a program for drilling offset sections of oceanic crust and upper mantle;

b) identifying target areas where specific objectives can be addressed;

c) identifying other survey information necessary to establish the geologic context of an offset drilling program; and

d) identifying the technological requirements to implement the strategy.

Motion Moberly, second Langseth Vote: for 16; against 0; abstain 0; absent 0

Austin repeated that DMP has recommended a specialist working group or workshop to consider downhole fluid sampling and that LITHP has endorsed this recommendation. It could be held in association with DMP's joint meeting with SGPP in June. Austin asked whether PCOM should endorse the specialist group and in what form.

Lancelot suggested that it be a USSAC workshop, but Austin replied that this would be too formal and slow to arrange. Swart stated that holding the meeting in conjunction with the June joint panel meeting would be ideal. Austin cautioned that there would be a budgetary impact. Cowan noted that DMP has recommended that no further action be taken on the wireline packer until such a specialist group has met. PCOM reached the following consensus.

PCOM Consensus

PCOM supports the convening of a specialist group to consider downhole fluid sampling. The meeting is to be organized by P. Worthington (DMP chairperson) and held, if possible, in conjunction with the June 1991 joint meeting of DMP and SGPP. If the specialist group does not meet at that time, it should meet as soon as possible. The specialist meeting is to be separate from the DMP meeting agenda.

Austin went on to raise the issue of Rea's complaint that the A&G-DPG had been too big. Austin referred to the Agenda Book blue pages 22, where the section from the ODP Policy Manual on DPGs is reproduced. He commented that the membership policy as outlined in this statement was adopted in full at the A&G-DPG (see letter from Rea to Austin, Agenda Book white pages 367). There were 16 invited attendees, including A&G-DPG members, representatives of international partners and non-voting liaisons.

Natland queried the reason for the attendance of so many people when only two proposals were involved and the mandate was so specific. Austin responded that the A&G program is very popular. Duncan suggested striking the second paragraph of the statement in the ODP Policy Manual. Responding to a question from Austin, Moberly said that EXCOM would have to approve such an action. Austin said that there would still be pressure to include representatives from international partners, since this is included in MOUs. Beiersdorf felt that the second paragraph could be removed, since it is covered by the MOU and, therefore, international partners can still send representatives. Moberly cautioned that DPGs have more power than panels in terms of sites drilled. Pyle said that the paragraph is written in an odd way and should be dropped. Austin said that its deletion would not change staffing, but Tucholke agreed with the deletion. Watkins pointed out that only three international partners had sent representatives, but that there had been seven liaisons. Natland felt that, having received this complaint, PCOM will in future take some care to include people on DPGs who can serve multiple functions.

Austin noted that the ODP Policy Manual DPG statement is poorly worded, since it does not discuss balancing proponents and non-proponents, yet that is something PCOM does routinely. Lancelot suggested removing the paragraph and then asking the international partners to send representatives with specific skills. Moberly said that, in view of the awkward wording of paragraph two, it should be stricken and streamlined wording passed to EXCOM for approval. Tucholke commented, and Austin agreed, that some words should be included to describe how DPGs should be constituted, rather than leaving this to corporate memory. Jarrard stated that ODP-TAMU and ODP-LDGO should have liaisons to DPGs and Francis agreed. Austin asked whether PCOM should, therefore, amend the third paragraph. Rea reported that the ODP-LDGO liaison had been very useful. G. Foss, of ODP-TAMU, could not attend because of time commitments, but Rea obtained a great deal of information from him by phone. Rea proposed allowing the chairperson to invite the participants he or she wants, but Austin noted that the chairperson already has this authority. Malpas suggested adding a note that PCOM should decide the size of the group such that it be commensurate with the task at hand. PCOM passed the following motion.

PCOM Motion

In view of the awkward wording of paragraph 2 of the DPG mandate, PCOM moves that Paragraph 2 be stricken and replaced with:
"The DPGs are composed of a balance of U.S. and non-U.S. members, and proponents and non-proponents. The size of the DPG should be commensurate with the charge of the group".
Motion Tucholke, second Duncan Vote: for 14; against 0; abstain 2; absent 0

PCOM passed the following motion thanking the NAAG and A&G DPGs.

PCOM Motion

PCOM thanks the North Atlantic Arctic Gateways Detailed Planning Group (NAAG-DPG) and the Atolls and Guyots Detailed Planning Group (A&G-DPG) for their expeditious and informative reports. We consider both DPGs to have fulfilled their charge and accordingly disband them.
Motion Cowan, second Leinen Vote: for 16; against 0; abstain 0; absent 0

900 OLD BUSINESS; CONTINUING ISSUES

FY92 PROGRAM PLAN

Austin introduced the issue of whether Leg 140 would be Hole 504B or HD. An update from the *JOIDES Resolution* will be presented by Francis on the next and final day of the PCOM meeting. (Leg 137 was nearing the conclusion of its operations at Hole 504B at the time of the PCOM meeting.) It may be possible to make the decision about Leg 140 at that time. PCOM must, however, decide on a procedure for deciding on Leg 140 if final word on the status of Hole 504B is received after the PCOM meeting. If Hole 504B is clean, then Leg 140 can return there. PCOM must decide how to proceed if the cleanliness of Hole 504B is in question.

Beiersdorf observed that even if Hole 504B is clean, the liner may be in poor condition. Storms said that the condition of the liner was unknown as yet, but that the hole has proved particularly stable and a liner may not be needed. Storms added that there was a question as to whether to spend money on guidebases for HD or on hardware for Hole 504B. Austin, however, said that FY92 money would be used for the liner, but that the HD guidebase would not be paid for from FY92 money if HD is Leg 147. He asked why not spend the money in hand on Hole 504B, a FY92 project? Francis responded that he had thought that the (HD) money was to be spent on DCS III if HD was deferred. Moberly, however, noted that BCOM has recommended that money for HD will be carried forward to the year in which it is drilled, rather than being transferred to DCS III automatically. Storms said that money was available for Hole 504B or HD, whichever became Leg 140. Austin agreed, but stated that if Hole 504B is Leg 140, and it needs a liner, then that will be the top priority; both Francis and Storms agreed.

Austin asked about Leg 140 decision-making, should the status of Hole 504B be uncertain. Malpas recommended dropping Hole 504B in that event and proceeding to HD, though he noted that this would probably result in objections from SSP and TECP. Austin agreed with the switch to HD under such circumstances, adding that proponents say that they can have a survey package together in time for Leg 140. Lancelot agreed and Austin noted that TECP is happy with the initial approach adopted for HD. Natland said that whether Hole 504B is either clean or junked, the procedure is clear; the problem is whether Hole 504B should be attempted if the situation is cloudy. A leg with contingencies may be required. Austin responded that contingencies already exist. Lancelot said that if the status of Hole 504B is cloudy, Leg 140 should be HD; Duncan agreed. Langseth cautioned that a decision should be deferred until July, when the new survey package is in hand, adding that it is just as risky to go to HD as to return to an uncertain Hole 504B. He asked whether ODP-TAMU can accommodate such a delay. Francis, however, replied that July would be too late and that three months lead time is required. Tucholke said that it was not known whether there was a good drill site at HD. He said that the situation is reminiscent of that at SWIR (Leg 118), which was almost a disaster because photogeology for site identification was unavailable. Fortunately, Leg 118 was rescued by an accidental, exciting Hole 735B. Austin responded that a Leg 140 co-chief has given assurances that sites exist, based on a preliminary examination of the data. Lancelot stated that the data and sites are available and that only the final selection remains to be made. He added that HD would be less risky than SWIR or a cloudy Hole 504B. Malpas suggested polling PCOM at the end of Leg 137. Austin said that Francis will send a synopsis of Leg 137 to the JOIDES Office and that this will be sent to PCOM members. In response to a question from Langseth, Francis said that the engineers need to have a decision on HD by early May.

Austin reported that the next issue to be resolved within the FY92 schedule is the TECP recommendation that 4 more drilling days be added to Leg 141 (CTJ). He asked if anything could be achieved by changing the Panama and Valparaiso port calls. Francis replied that changing the port calls will not help. The SEDCO time at sea is critical and "the meter starts to run" after Panama. Leg lengths must be maintained at 56 days to avoid staff burnout. Co-chiefs should use the time at their disposal. The 39 days on site scheduled for Leg 141 is comparable to other legs. Francis concluded by stating that he would resist lengthening the leg. Natland endorsed Francis' stance. Austin summarized the situation by noting that PCOM had realized that there would be complaints about numbers of days on site versus days in transit when it set the FY92 program, but that he did not feel that PCOM could take any action to improve matters.

Regarding Leg 142, Austin expressed the opinion that there was little need for further discussion. The leg has an active co-chief, an ODP-TAMU engineer has been aboard the *Alvin* cruise and surveyed the primary on-axis site, and PCOM has been polled without dissention about the change to such an on-axis site. He asked whether a motion was required, but the feeling of PCOM was that a consensus would be sufficient. PCOM reached the following consensus.

PCOM Consensus

PCOM approves the change from an off-axis location, as originally recommended by the EPR-DPG, to an on-axis location for the first site to be drilled during Leg 142 on the East Pacific Rise.

Storms pointed out that PCOM should discuss where to set a second HRB if high temperatures are encountered at the primary site and a move to a second site is required. Moberly said that both an on-axis and an off-axis site should be reviewed by PPSP. Batiza and Storms can then make the decision aboard ship if the situation arises. Storms presented a potential scenario in which the primary (on-axis) has been successfully drilled to ~175 mbsf and time remains to place a second HRB to test the DCB. He asked whether this HRB should be placed next to the DCS hole, so that the results of DCB and DCS drilling can be compared. If it was placed at a separate location, the test may not be fair. Natland said that, since HRBs can be moved, there might be some point in setting up for a scientific target if time is available at the very end of the leg. Austin expressed reluctance to interfere too much in shipboard decisions. He added that there is, however, a budgetary implication since, though a second HRB will be carried on Leg 142, it is intended for use at HD. Moberly proposed leaving the decision to the co-chiefs, who can call for assistance if necessary. Austin said that the minutes would reflect that feeling by PCOM.

Austin said that the issue of port calls between legs 143, 144 and 145 has already been resolved. Moberly asked whether use of Hakodate (on Hokkaido) might be preferable to Yokohama at the end of Leg 144, since it would result in one less travel day on Leg 145 (North Pacific Transect). Austin cautioned that, in August, PCOM would be considering a supplemental science proposal that would take time away from an A&G leg. Francis said that it might be logistically difficult to use Hakodate. Austin said that ODP-TAMU should investigate the use of Hakodate. Francis agreed to investigate.

Tucholke suggested that the scientific party for Leg 141 (CTJ) be allowed to embark at Valparaiso, instead of Panama, since this would save them 8 days. Francis asked that this issue

be deferred, because there is a possibility that the *JOIDES Resolution* may have to put into Valparaiso in any event for clearance purposes.

Thursday, April 25 1991

PROJECT "APTICORE"

Austin began the session by allowing an announcement by R. Larson of URI on his proposed Project "Apticore", part of the Cretaceous Greenhouse Coring Project. Larson distributed a handout at the meeting. Studying the onset of the Cretaceous greenhouse may enable prediction of how the modern greenhouse may occur. Larson explained that rates of production of oceanic crust from mantle plumes and continental flood basalts (also from mantle plumes) have not been constant, but experienced a pulse at ~120-125 Ma, followed by a gradual decline. He suggested that a large amount of lowermost mantle material had become detached and erupted, initially in the Pacific Basin as a "super plume", and subsequently spreading to other basins. Larson plans to examine the geologic consequences of the super plume. The pulse is also visible again in the Aptian at ~120 Ma, when total oceanic crust production (from both mantle plumes and mid-ocean ridges) is considered. Coeval with the pulse were black shale deposition, oil in the Middle East, a magnetic reversal frequency of zero, and elevated temperatures and sea level. Project "Apticore" will study how these processes and events occurred by initially coring the impulse at the earliest Barremian-Aptian section in Italy. Systems such as plankton evolution, anoxic events, etc. will be examined, together with their interrelations, including phase leads and lags and modulation by location relative to plumes. Larson would like this to be a combined terrestrial and marine program, and noted that the same interval can be cored in the western Pacific and North Atlantic. Responding to a question from Austin, Larson said that he had not yet related this study to IGBP or other Cretaceous groups, but that it should be possible to work together.

901 MEMBERSHIP AND PERSONNEL ACTIONS

DMP

B. Carson is rotating off the panel. Austin said that names of three nominees will be sent by the panel chairperson to the JOIDES Office. The FRG representative, H. Villinger, will be replaced by J. Draxler. Beiersdorf notified PCOM that Draxler is head of the borehole group in KTB and is an ex-Schlumberger employee. He added that Draxler will tie KTB and ODP more closely. Leinen reported a SMP concern that J. Gieskes, the DMP liaison to SMP, has never attended a SMP meeting, yet DMP has declined to nominate another liaison. Moberly explained that DMP has stated that they will send appropriate liaisons, but that Gieskes would continue to be the named liaison. Austin said that he will raise the issue with Worthington. Langseth recalled that there has previously been some concern about the size of DMP and suggested that a replacement for Carson might be unnecessary. Austin proposed deferring further discussion, adding that he will contact PCOM by mail when he receives the nominees.

SMP / IHP

I. Gibson, SMP liaison to IHP, has been nominated as the new chairperson of IHP. (T. Moore, present IHP chairperson, wishes to retire.) Austin explained that if PCOM endorses this plan, a new SMP member should be chosen. SMP wanted a replacement with computer systems expertise and R. Chaney is the nominee. The new SMP member may also be the

liaison to IHP. Malpas felt that since Gibson is the representative of Canada-Australia (C-A), he should be replaced by a C-A nominee. He added that Gibson has been involved with JOIDES panels since 1982. Lancelot expressed the opinion that Gibson would be a good chairperson. Austin said that discussion of a replacement for Gibson on SMP could be deferred until C-A nominees are received and reiterated that the replacement should have computer expertise. Malpas said that nominees should be available in three weeks when their ODP council meets. Lancelot noted that W. Sager was also nominated by IHP as an alternative if Gibson could not serve. In the event that no nominee is forthcoming from C-A, the consensus of PCOM was that Chaney's nomination would be accepted. PCOM reached the following consensus.

PCOM Consensus

PCOM expresses its appreciation and thanks to T. Moore for his long and outstanding service as IHP chairperson. PCOM hopes that his schedule will permit him to remain on IHP as a member.

SSP / PPSP

No action required.

TEDCOM

A new ESF representative is required, since H. Strand has rotated off the panel. TEDCOM would prefer someone with experience in high-temperature drilling, but no names have yet been received. Duncan reported that he had sent the names of two Icelanders to Sparks (TEDCOM chairperson). Cita-Sironi said that she would discuss the issue at a meeting in two weeks. Austin stated that the new member is required for TEDCOM's proposed 8-9 July meeting.

LITHP

M. Perfit is rotating off the panel. LITHP wants to add expertise in the geology and geochemistry of the lower crust and upper mantle. S. Bloomer has been nominated and is willing to serve. Moberly felt that Bloomer was appropriate, but said he thought that PCOM had asked to be provided with a choice of nominees. Austin said that PCOM can ask for another name. Tucholke suggested adding tectonic expertise to avoid "lithologic tunnel vision". Natland, however, responded that Cloetingh and Karson (TECP's liaison) have tectonic expertise and Austin added that LITHP has requested a joint meeting with TECP. Austin said that he can reinforce PCOM's decision that there always be a choice of nominees and will ask Humphris (LITHP chairperson) for another name and emphasize a tectonic background.

OHP / SGPP / TECP

No action required.

NARM-DPG

LITHP has asked that one more petrologist be added to NARM-DPG. The request has been echoed by the NARM-DPG chairperson, who has also asked that R. Buck be re-invited. (Buck was invited to the first meeting but was unable to attend.) Tucholke reported that the NARM-DPG, though large, had functioned efficiently. It has a large topic to address and there is a need for a petrologist. He added that there was no LITHP liaison at the first meeting. Cloetingh is the designated LITHP liaison, but he is not a petrologist. LITHP has suggested Saunders as the additional petrologist. Austin agreed that there is a need for more petrological input. Austin added that he would try to arrange an appropriate LITHP liaison and that Buck is also welcome to attend. The second meeting will be held in August and the NARM-DPG chairperson will report at the August PCOM meeting.

PCOM passed the following motion.

PCOM Motion

PCOM moves that the persons nominated for panel, DPG and WG membership be invited to serve.

Motion Moberly, second Natland Vote: for 16; against 0; abstain 0; absent 0

PCOM LIAISONS

Austin asked whether any changes in PCOM liaisons were anticipated prior to the August PCOM meeting. He referred to the list of upcoming meetings and table of PCOM liaisons on Agenda Book blue pages 25 and 26.

Moberly notified PCOM that he will be leaving PCOM and will not attend the August meeting. He reported that his replacement will be B. Taylor. Moberly said that he could, however, attend the PPSP meeting in May (if Austin is in the USSR at that time) since no report to PCOM would be required. He felt, however, that it would be inappropriate for him to attend the June SGPP meeting.

Swart stated that he will be attending the SGPP meeting and that he would also be replacing Becker at PCOM's August meeting. Cowan explained that Becker will be at DMP, but not at PCOM, and volunteered to report on DMP at the August PCOM meeting. Austin asked that Moberly attend the PPSP meeting if he is unable to attend because of a possible conflicting meeting in the USSR. Austin noted that Natland can attend the TEDCOM meeting. The matter of a PCOM liaison to SGPP can be deferred, as Swart will be at SGPP in June..

Austin noted that Watkins and Tucholke are PCOM liaisons to the SL-WG and NARM-DPG, respectively. He added that he will contact LITHP and TECP chairpersons in the next week or two for nominees to the OD-WG, and that a PCOM liaison will be required. Moberly suggested Taylor and Austin agreed, asking Moberly to inform Taylor that OD-WG will meet in late June or July. Tucholke informed the panel that he would not be available as PCOM liaison to NARM-DPG in August, or at the August PCOM meeting. Beiersdorf offered von Rad's services as liaison to NARM-DPG. Austin asked that Beiersdorf check that this was convenient for von Rad. Duncan said that he could serve as NARM-DPG liaison if von Rad cannot.

PCOM WATCHDOGS FOR HIGHLY RANKED PROGRAMS

Watchdogs might be necessary for programs that might be on the FY93 schedule, but are not covered by liaisons. The JOIDES Office will generate a FY93 prospectus, whose format will be discussed in August. PCOM's feeling was that, with the availability of DPG reports, there was no need for immediate action.

PCOM ROTATION DATES

Austin noted that Taira and Tucholke have been PCOM members for a long time. Rotation is supposed to occur after four years, with a 5th year in some cases, though international partners can set their own policies. Tucholke noted that he was originally an alternate on PCOM and has not been a member for the entire period.

LIAISON WITH OTHER INTERNATIONAL GLOBAL EARTH SCIENCE PROGRAMS

T. Pedersen is a member and co-chair of the liaison group between JGOFS and ODP. PCOM must now nominate a non-PCOM ODP liaison to JGOFS. Leinen pointed out that Shackleton is already in JGOFS and Austin said that he would ask Shackleton.

J. Bender (LITHP) is the ODP liaison to InterRIDGE. InterRIDGE is reciprocating. Austin explained that a chair and a member will be selected from the three InterRIDGE nominees listed below. Bender will be the chair for ODP. J. Franklin (LITHP) has been nominated as ODP member. The chairperson from the InterRIDGE liaison group will be at the August PCOM meeting.

InterRIDGE	JOIDES
P. Fox	J. Bender
M. Sinha	J. Franklin
J. Francheteau	

CO-CHIEF SCIENTIST NOMINATIONS

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

Legs 143 and 144, Atolls and Guyots

US: F. Duennebier* (Hawaii), J. Haggerty (Tulsa), M. McNutt* (MIT), W. Sager* (TAMU), B. Sliter (USGS), E. Winterer* (SIO)

Non-US: K. Konishi (J), I. Premoli-Silva (ESF), W. Schlager (ESF)

Leg 145, North Pacific Transect

US: J. Barron (USGS), L. Keigwin* (WHOI), J. Morley* (LDGO), D. Rea (Michigan)

Non-US: I. Basov (USSR), B. Bornhold* (C-A), T. Pedersen* (C-A), R. Stein (FRG)

Leg 146, Cascadia

US: B. Carson* (Lehigh), M. Goldhaber (Colorado Sch. Mines), C. Moore* (UCSC), G. Moore* (Hawaii)

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

Leg 147, Hess Deep or Engineering EPR

Discussion deferred until August PCOM meeting.

PCOM expressed a clear preference in favor of proponents serving as co-chiefs, where feasible. In response to a question from Moberly, Francis said that it has been rare to have two US co-chiefs on the same leg. Lancelot suggested that MOUs be modified to specify that a US/international balance be maintained in the scientific party as a whole, but not necessarily among co-chiefs. Austin said that he would present this to EXCOM.

902 FUTURE MEETINGS

The 1991 Summer PCOM meeting will be hosted by U. von Rad at the Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover FRG, from 20-22 August 1991. A two-day field trip to the Harz Mountains, led by F. Koppel, will be held following the meeting (handout distributed at the meeting). Beiersdorf informed PCOM that the cost of hotel rooms will be $85-$90 per night and includes breakfast. The hotel is located in the center of Hannover.

The 1991 PCOM Annual Meeting will be hosted by J. Austin and the JOIDES Office at the University of Texas at Austin, Institute for Geophysics (Thompson Conference Center), from 4-7 December 1991. The meeting will be preceded by the Panel Chairperson's meeting at the same location on 3 December 1991. A one-day field trip will be held prior to the meeting on Monday, December 2, for participants willing and able to travel to Austin on Sunday, December 1. A head-count showed 15-20 people interested in the field-trip.

The 1992 Spring PCOM meeting will be hosted by R. Duncan at Oregon State University, College of Oceanography, from 21-23 April 1992. A one-day field trip will be held on Monday 20 April, preceding the meeting, in the Coast Ranges. Attendees can fly to either Eugene or Portland and arrangements will be made through Allison Burns to collect people at airports.

The 1992 Summer PCOM meeting will be hosted by J. Malpas in Victoria, British Columbia, Canada from 18-20 August. A field trip will be held on August 21, following the meeting.

The 1992 PCOM Annual Meeting will be hosted by J. Mutter at Columbia University, Lamont-Doherty Geological Observatory. No further details are available.

903 NEW BUSINESS

OPCOM

Austin introduced items of new business: the letter from Francis regarding use of the drill ship for deployment of seafloor observatories (Agenda Book white pages 399), use of alternate platforms for shallow-water drilling for A&G or SL-WG objectives, and discussion of how PCOM will respond to the new $2.1M from NSF. Austin observed that improving the XCB is one of the priorities of the LRP, supporting PCOM's prioritization of engineering objectives, as is use of supplemental platforms. Regarding the additional funds, Austin stated that NSF would like the discussion to be as far-ranging as possible, either within PCOM, or a sub-group to be formed by PCOM at this meeting.

Malpas acknowledged that there should be some discussion of the extra funds by PCOM, but that there was insufficient time to reach a conclusion on how to spend the money. He suggested reconstituting STRATCOM to formulate new ideas. Austin cautioned that the plan is needed before October 1, but Malfait pointed out that this was not essential, adding that NSF has communicated to JOI, Inc. that the "opportunity" is there to move to a higher budget level. NSF sees the new funds as a great opportunity to implement aspects of the LRP. The budget and program plan can be amended at any time during the FY. Pyle commented that October represents the earliest date at which the funds can be made available. Malpas suggested that PCOM discuss the issue briefly now, then have an augmented subcommittee meet and return with further ideas in August. Francis asked whether the $2.1M would be a step-function increase in the annual budget, or a one-year infusion. Malfait answered that, provided that things do not change dramatically over the 1992 - 1994 timeframe, NSF would like to meet budget levels identified in the LRP for that period. Moberly commented that a riser is out of the question unless such funding levels continue. It would, however, be possible to begin planning how to move toward riser drilling. Austin informed PCOM that ODP is taking some action on every implementation plan mentioned in the LRP except use of alternate platforms. The LRP makes no specific mention of a riser.

Watkins suggested that the money not be tied up, but retained for targets of opportunity, but Austin countered that the results would not be visible and that it was important to do something new. Swart stated that the basic jack-up platform used in the Bahamas cost $350,000 (without rig) and $800,000 for the whole project, adding that alternative platforms would use up the extra money quickly. Such platforms are not very mobile, but can be arranged quickly in the present economic climate. Austin noted that the New Jersey sea level program is a high-profile target that requires shallow-water drilling and is geographically close to sources of alternate platforms.

Francis reminded PCOM of ODP-TAMU needs: DCS III, increasing technical support staff, a second computer systems manager (involving two individuals, as it is a seagoing position), and an ice support vessel for NAAG at a cost of about $1M per leg. Cowan asked whether spending more money would yield DCS III sooner and Francis answered that it would. Langseth felt that the extra money provided an opportunity to put DCS III funding on a rational basis, and added that he would like to see a plan for DCS III, including cost estimates, and an evaluation of the cost required to accomplish the task within a specific timeframe. Austin reminded PCOM that a meeting on the DCS had been held in December and had concluded that

funds were not available to develop DCS III quickly. NSF turned down a request for additional funds made at that time. NSF has now come through with money; NSF wants PCOM to consider a broad range of options for its use. Langseth reiterated that PCOM should have DCS III projections before it.

Malpas noted that the LRP recommends expanding the community involved in ODP, e.g., into global change. He suggested using the money for long coring facilities and possibly alternative platforms. Natland reviewed TEDCOM discussions and recommendations. TEDCOM wants deep drilling targets to be provided to ODP-TAMU so that plans for deep drilling can be devised. Some additional money could be used for extra personnel at ODP-TAMU to make the required studies. TEDCOM has also given its opinion that the DCS will never be made a reality with only one leg in ten devoted to it, and that a dedicated platform will be required for testing. Moberly felt that PCOM should be provided with quantitative information concerning development and testing of the DCS. Taira expressed support for Natland, noting that the DCS is an important commitment and that deep drilling is important for the future of ocean drilling.

Austin said that he would like to involve panels, perhaps panel chairpersons, and also obtain more input from ODP-TAMU, before a decision is made. He proposed that, as suggested by Malpas, a group be convened, preferably at JOI, Inc., prior to the August PCOM meeting, and that PCOM be ready to recommend a strategy to NSF in August. The group would be similar to STRATCOM, but also include thematic panel chairpersons. Moberly said that the TEDCOM chairperson (Sparks) should also be present. Watkins volunteered to represent sea-level interests.

Austin, discussing the mandate of the group, for which the name OPCOM (OPportunity COMmittee) was suggested by Duncan, said that actual and estimated costs of DCS development and testing, deep drilling, and alternate platforms will be needed. He noted that there is a competing global change program, NEREIS. Lancelot explained that the French attitude is to push deep drilling and have an alternative platform for shallow objectives. The timeframe would be 1995 - 1998, and not interfere with ODP renewal. He proposed linking programs such that NEREIS would be under the aegis of JOIDES. Austin responded that this will be an EXCOM item. He asked if linkage should be at the level of science and/or funding. Lancelot replied that it is a medium-term issue. Moberly noted the short-term importance of long-coring. Langseth said that it might be premature to include deep drilling in the discussion since it will take a long time, and a lot more money, to make the leap from 1.5 to 3 km penetrations. Austin said that perhaps PCOM should refer to maximizing the capabilities of the *JOIDES Resolution*. Natland reiterated that his suggestion had only been to allocate some of the money to carry out deep drilling studies. Austin cautioned that the LRP cost estimates are outdated, yet are used by other groups as a basis for budgeting. Francis suggested including staff costs. Austin said that staffing will be part of the cost estimates of the other items. In answer to a question from Duncan, Austin said that PCOM will prioritize OPCOM-identified items in August. Tucholke said that he would like to see subjects with costs and also timing, i.e. flow charts. Langseth said that logging in DCS holes should appear.

The preliminary mandate for OPCOM, which will require some cost estimates before its initial meeting, is as follows.

OPCOM Mandate

1.) DCS development and testing, including:
- **(a) Deployment from alternate platforms, for continuous testing.**
- **(b) Consideration of downhole measurements.**

2.) Deep drilling.
- **(a) 2 to 2.5 km holes, leading to maximizing the capabilities of the *JOIDES Resolution*.**
- **(b) Long-term planning, beyond *JOIDES Resolution*.**

3.) Alternate platforms.
- **(a) 1995 - 1996: linkage with "other" programs (e.g., global change).**
- **(b) Long coring facilities.**

4.) High-latitude support vessels (FY93 and beyond).

5.) Staff costs for the above.

For each of the above, there must be discussion of the subject, costs and timing (i.e. flow charts).

Lancelot volunteered to serve to discuss long coring and the use of the French platform in Polynesia (but cannot attend on the selected date and will supply a written report). Moberly suggested G. Brass to serve high-latitude interests. Austin said that he would like to keep the group small, with no more than four from PCOM. In response to a question from Natland, Austin said that if OPCOM meets after TEDCOM, Natland should raise the issue at TEDCOM. Francis asked if there should be an ODP-TAMU representative. Austin replied that there should be someone who can explain cost estimates. Francis volunteered. A need was also expressed for a representative from ODP-LDGO. Jarrard was selected. Austin also felt it important to have NSF representation. The preliminary membership list for OPCOM is as follows.

J. Austin (PCOM)
G. Brass (Miami)
T. Francis (ODP-LDGO)
S. Humphris (LITHP)
R. Jarrard (ODP-LDGO)
J. Malpas (PCOM)
J. McKenzie or E. Suess (SGPP)
E. Moores (TECP)
N. Shackleton, or representative (OHP)
C. Sparks (TEDCOM)
J. Watkins (PCOM)
P. Worthington (DMP)

Austin said that OPCOM's report must be ready for PCOM in August. Pyle noted that new ideas presented at the meeting will not have cost estimates. Austin acknowledged that the report may be preliminary. Pyle suggested starting preliminary discussions early in June, before the July date envisaged for OPCOM, and Austin added that two meetings might be necessary. Moberly recalled that a number of international members at EXCOM had commented that it might be bad to have a last-minute funding increase close to renewal. This could be a renewal issue and is, therefore, important enough to justify two meetings. Austin said that he would try to arrange a first meeting of OPCOM in early June. Duncan suggested having only one meeting, but having ODP-TAMU engineers bring new cost estimates to the August PCOM meeting. Beiersdorf stated that results should be received by international partners for discussion 2 to 4 weeks prior to the August PCOM meeting. Austin responded that at least an executive summary would be ready three to four weeks before the August PCOM meeting. The first meeting of OPCOM was scheduled for June 7 at JOI, Inc., in Washington, D.C. Austin will write up a charge to OPCOM, based on PCOM discussion. He added that scheduled

PCOM discussion of seafloor observatories and alternate platforms will be deferred to OPCOM.

SHIPBOARD STAFFING AND SCIENTIFIC PARTY

Austin referred to Agenda Book blue pages 29. SMP and IHP have endorsed a second, full-time seagoing computer-system manager on each leg. SMP also still wants to increase the number of shipboard technical staff. He asked when the limit imposed on personnel numbers by the size of the *JOIDES Resolution* will be reached. Francis informed PCOM that there are 51 spaces for ODP. The usual complement comprises a technical staff of 18, 1 - 2 engineers and a scientific party of about 28, for a total of 47-48.

Austin suggested that the size of these scientific parties should be reduced. Natland pointed out that there will be a co-chief scientists' meeting at the end of May and that they should discuss this issue; Austin agreed. Lancelot commented that this was discussed at the last co-chief's meeting. He suggested that it might help if technical staff could be considered as foreign participants under revised MOUs.

Francis presented a listing of ODP-TAMU shipboard technical staff (Appendix 12), pointing to an existing shortfall of 4 persons. Austin recalled that the feeling at the 1990 Annual PCOM Meeting was that cruise participants, including students, prefer to sail as scientists rather than technicians. Lancelot said that international partners could be asked to provide technicians, not students, but Francis said that ODP-TAMU is responsible for the quality of technical support. Austin noted that this would involve an increase in costs to international partners. Lancelot agreed that France cannot pay for a technician to work at ODP for two years. Austin commented that this would still be too *ad hoc* and not a reliable source of technical support. Lancelot added, however, that France could send technicians instead of scientists. Cita-Sironi felt that international technicians would not solve the problem and, furthermore, that it would be difficult for a consortium such as ESF to organize such an exchange. Jenkyns thought that provision of UK technicians would be acceptable, but only on an *ad hoc* basis. Malpas offered to pursue the possibility of organizing a two-year appointment of a C-A technician. Austin asked Lancelot to explore similar possibilities in France. Taira said that Japan would be restricted to *ad hoc* provision of technicians. Austin remarked that ODP-TAMU must not have to provide funds for international technicians.

Austin added that PCOM should still make a statement about the growing size of scientific parties. Leg 101 had 22 scientists. Now the number has reached 28, and this is part of the reason for the need for greater technical support. Lancelot supported the concept of smaller scientific parties. Natland raised the issue of limited work space in labs. Swart expressed the opinion that quality, not quantity, of technical support should be increased, adding that some technicians are not interested in their jobs. Francis challenged this perspective, noting that the general message from co-chiefs has been supportive. Lancelot said that the quality can be variable. Francis responded that there is a rapid turnover among technical staff. Austin stated that ODP-TAMU does a good job of keeping technical staff, who tend to get burnt out. Moberly recalled that a confidential letter used to be sent by co-chiefs commenting on the performance of technicians. Francis said that this has been replaced by a post-leg overview from each member of the scientific party. Austin warned that, as the oil industry picks up, it will become harder to keep technicians in College Station. Francis added that, although ODP-TAMU technicians are paid 80% over their base salary when at sea, they can earn even more in a land-based job in the environmental industry. Austin deferred suggesting a numerical limit for

the scientific party until ODP-TAMU can provide a histogram of scientific party size for review at the August PCOM meeting. PCOM reached the following consensus.

PCOM Consensus

PCOM notes the tendency for shipboard scientific parties to be too large. Concerns are:

1.) The difficulty of managing large groups.

2.) The high ratio of scientists to technical support staff.

3.) Crowding of laboratory facilities and work stations.

4.) Amounts of time and effort needed to support individual scientists' needs (e.g., sampling).

SOFTWARE / HARDWARE ITEMS

Francis presented a list of software and hardware items requested by SMP, DMP, PPSP and the co-chiefs' meeting (CC), with the status of each item (Appendix 12). Moberly asked how many will not have been covered by the end of FY91, adding that there should be a residual list for SMP and PCOM to prioritize, to assist with deciding how the $160,000 budgeted by BCOM for scientific equipment should be spent. Austin said that real time navigation, for example, will not begin in FY91. He added that this list should be updated and presented at every PCOM meeting. Moberly said that at some time, ODP-TAMU will have to be told how to spend the $160,000, but Francis felt that this might be micromanagement. Langseth suggested a similar list for logging tools and Austin agreed, noting that this was a task for Jarrard or his successor.

Austin reminded PCOM about availability of the ODP-TAMU poster display. Francis said that interested individuals should send to Audrey Meyer the name of a contact person in each institution, to receive updates to the poster (approximately every 6 months).

POST-CRUISE MEETINGS

Austin observed that post-cruise meetings are being held outside College Station more frequently and that this was expensive. Natland suggested that the first post-cruise meeting should be held in College Station and the second at a location decided on the basis of cost. Austin noted that US travel costs are exceeding the budget. Although he would like to have the minutes reflect his opinion for now, he encouraged purchase of cheap tickets and stated that post-cruise meetings should be examined on a case-by-case basis. Costs should be considered.

Swart said that post-cruise meetings are also becoming too long, with one for 5 days now scheduled in Spain. Pyle explained that this is a diplomatic issue. JOI, Inc. had tried to allow some flexibility with regard to post-cruise meetings, but things are going too far. The primary concern of JOI, Inc. are the costs to subcontractors, ODP-TAMU and ODP-LDGO. Kappel added that no formal mechanism exists for post-cruise meeting site selection and it is, therefore, difficult to refuse when a site is requested by co-chiefs.Pyle saw recent developments as part of a trend. Lancelot commented that increasing visibility of ODP has been considered important and, therefore, international meetings have been authorized. This must be kept within reason, however. Austin asked whether PCOM wished to make the process for approval of post-cruise meetings more formal. Jenkyns pointed out that there is a scientific

rationale for the Leg 133 location in Spain, related to the presence of Messinian reefs. Beiersdorf suggested meeting at the center of gravity of cruise participants' home institutions to keep costs down. Austin asked for a list of upcoming meetings to enable PCOM to judge the situation. Cowan suggested that the center of gravity principle also apply to panel meetings, but Austin replied that he approved panel meetings and demanded that chairpersons justify venues. Pyle noted that the only principle is that venues should rotate between member countries, but venues such as Cyprus (proposed for the Fall 1991 LITHP-TECP joint meeting) need justification. Kappel provided the following list of locations of post-cruise meetings:

125	California	129	California	132	Engineering Leg
126	Hawaii	130	Hawaii	133	Spain
127	Japan	131	Japan	134	Villefranche
128	Japan				

Austin felt that the list was not unduly disturbing, but suggested that JOI, Inc. feel free to refuse occasionally. Pyle, however, responded that it is not clear where the authority lies. Austin said that co-chiefs could apply to him, as PCOM chairperson, for approval. Watkins suggested a budget cap. Pyle reminded PCOM that JOI, Inc. concerns only involve ODP-TAMU and ODP-LDGO. Natland stated that, prior to JOI, Inc., travel funds came from DSDP. Austin offered to review applications for post-cruise meetings, adding that he would need an updated list including numbers of days, field trips, and budget. There was general consensus supporting this course of action.

HOLE 504B

Francis provided an update on Leg 137 operations. After the second run with the DCB, the bit was again found to have suffered excessive wear, probably because the matrix is too soft. The hole was clean and contained no junk and the issue did not appear to be cloudy as of this report. The plan was to start packer permeability tests, with flowmeter, followed by the digital BHTV and a final permeability slug test. PCOM should discuss the following: 1.) The liner. G. Foss has commented that, from the point of view of long-term drilling, a liner is desirable. However, this would prevent study of interesting fluid flow into the hole. 2.) Drilling ahead. Options are RCB, DCB (with improved bit), or tri-cone bit drilling with spot coring, relying on logging to bridge gaps (the fastest option).

Natland asked when the liner would be placed. Francis answered that it would not be on Leg 137 and, furthermore, that it would reduce the diameter of the hole and affect the choice of drilling system. Malpas said that the hole has been very stable and that a liner may, therefore, be unnecessary. He added that Hole 504B is approaching a critical boundary, the layer 2 - layer 3 transition, within ~200 m, and recommended against spot coring. Austin agreed that spot coring would set a bad precedent. Lancelot stated that a liner was proposed in the event of there being problems with the casing. If the casing is acceptable after inspection, a liner should not be needed. Austin expressed the need for PCOM to generate a consensus or motion indicating opposition to installation of a liner if the casing is intact and opposition to spot coring. Austin noted that Hole 504B is clean, and that it is unlikely that unremovable junk will be left behind. In reply to a question from Duncan, Francis said that drilling operations should be left to the drillers, adding that the DCB can be modified and improved before Leg 140.

PCOM Motion

PCOM recommends against the setting of a liner in Hole 504B unless it is absolutely necessary to compensate for failing casing in the hole.
Motion Malpas, second Natland Vote: for 15; against 0; abstain 0; absent 1

PCOM Motion

PCOM moves that Hole 504B should be advanced in future with continuous coring procedures, especially in light of critical transitions to be sampled.
Motion Malpas, second Lancelot Vote: for 15; against 0; abstain 0; absent 1

Natland noted that Moberly was cycling off PCOM and commended him as having been not only a PCOM member and chairperson, but practically a charter member of scientific ocean drilling. He has been a shipboard scientist, co-chief and connoisseur of fine wines. On behalf of PCOM, he commended Moberly for his exemplary record of long service and offered him the best wishes of PCOM. Approved by acclamation.

904 ADJOURNMENT

The meeting was adjourned at 12:40 PM.

APPENDICES ATTACHED TO THE 23 - 25 APRIL, 1991 PCOM MEETING

1. JOI, Inc. report, supplemental information.
2. Science Operator report, supplemental information
3. Wireline Logging report, supplemental information
4. NAAG-DPG, supplemental information
5. NARM-DPG, supplemental information
6. SL-WG, supplemental information
7. Leg 135, supplemental information
8. Leg 136, engineering developments
9. Leg 142, DCS status report
10. Non-DCS engineering priorities
11. Priorities for downhole measurements
12. ODP-TAMU technical support group and status of equipment recommendations

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

1. NSF Report
2. Research strategies for the US global change research program
3. ODP operations schedule

4. Summary of CSG activity since last IHP meeting
5. The clathrate study system progress report
6. Addendum to TECP minutes (Hess Deep cross-sections)
7. NAAG Drilling Prospectus
8. Preliminary report NARM-DPG
9. SL-WG summary report
10. Project "Apticore" (R. Larson, invited presentation to PCOM)
11. PCOM Summer 1991 Meeting field trip information

Current (FY91) Status

- Fuel Costs
  - Extra $1.54M from NSF
- USSR has joined ODP
  - Scientific participation (Leg 138)
  - Contribution (last quarter FY91)
- Film Status
- Liaison Groups

Status of High Temperature Tools

- JAPEX (Geophysical Service Co.) Lease (T, P, F)
- BRGM lease - high temperature tool and new cable (Plastelec, SA) (T)
- Leased water samplers— LANL, LBL (CHEM)
- Development of resistivity tool with BGS/Camborne (meeting April 29/30) (R)
- Discussions with KTB and Sandia need non-DMP panelist

Program Plan (FY92) Status

- PCOM Science Plan
- Subcontractors "Budget Outline"
- BCOM Advice
- Draft Program Plan to NSF
- Administrative approval pending
- EXCOM

FY92 Budget Summary ($K)

	Standard	SOE	Total
Drilling & Engineering	3,716	1,230	4,946
Tech. & Log. Support	4,150		4,150
Science Operations	1,125	160	1,285
Science Services	3,469	161	3,630
Headquarters/Admin.	1,916		1,916
Subtotal	14,376	1,551	15,927
Ship Operations	19,878		19,878
Total TAMU	**34,254**	**1,551**	**35,805**
L-DGO			
General	1,583	140	1,869
Schlumberger	1,941		1,941
Total LDGO	**3,810**	**140**	**3,950**
JOI/JOIDES	**1,450**		**1,450**
MRC's *	**70**		**70**
TOTALS:	**39,584**	**1,691**	**41,275**
NSF Target	41,400		
SOE to be determined		**125**	**125**
Hi-T/Slimline tools			
Grand Totals:	**39,584**	**1,816**	**41,400**

* Micropaleontological Reference Centers

Summary of FY92 Special Operating Expenses

TAMU

1.	$ 70,000	**Publications** - To print additional material, working to eliminate the backlog and attain a steady state of publication by the end of FY92.
2.	$ 91,000	**Gulf Coast Repository** - For the expansion of the Gulf Coast Repository.
3.	$ 350,000	**Drilling Operations** - For necessary supplies and operational requirements to support Hess Deep activities.
4.	$ 880,000	**Diamond Coring System** Phase II - $660K - For supplies, equipment, subcontracts, technical support, etc. Phase III - $220K - For long lead items, subcontract support for additional design efforts.
5.	$ 160,000	**Science Support** - Intended for the purchase of scientific equipment based on the recommendations from SMP, IHP, and the scientific community. Purchases for FY92 may include a real time navigation system, fantail equipment, computer upgrades, doppler pit log, laboratory modifications, and/or a split-core Multi-Sensor Track.
	$1,551,000	TOTAL TAMU Special Operating Expenses

LDGO

6.	$ 140,000	High-temperature electrical resistivity tool
	$ 140,000	TOTAL LDGO Special Operating Expenses
	$1,691,000	**TOTAL Special Operating Expenses**

"Opportunity 92"

- Head-start on LRP
- Alternate platforms?
  - long-coring
  - shallow water coring
- Advisory Group
  - Stratcom? Panel Chairs?

Next Year

- Four year Program Plan (FY93, 94, 95, 96)
- Accelerated schedule

ODP OPERATIONS SCHEDULE

	Leg	Cruise Dates	Days at Sea	In Port
135	Lau Basin	22 December 1990 - 28 February 1991	68	Honolulu, 28 Feb-02 Mar 91
136	OSN-1	03 March - 20 March 1991	17	Honolulu 20 Mar 91 (Scientific Party Change)
137	Hole 504B	21 March - 01 May 1991	41	Panama 01-05 May 91
138	E. Equatorial Pacific	06 May - 05 July 1991	60	San Diego 05-09 July 91
139	Sedimented Ridges I	10 July - 11 September 1991	63	Victoria 11-15 Sept 91
140	504B*/Hess Deep	16 September - 12 November 1991	57	Panama 12-16 Nov 91
141	Chile Triple Junction	17 November 1991 - 13 January 1992	57	Valparaiso 13-17 Jan 92
142	Engineering, EPR	18 January - 19 March 1992	61	Honolulu 19-23 Mar 92
143	Atolls & Guyots A	24 March - 20 May 1992	56	Majuro Atoll 20-24 May 92
144	Atolls & Guyots B	25 May - 20 July 1992	56	Yokohama 20-24 July 92
145	North Pacific Transect	25 July - 21 September 1992	59	Victoria 21-25 Sept 92
146	Cascadia	26 September - 21 November 1992	56	San Diego 21-25 Nov 92
147	Engineering, EPR‡/ Hess Deep	26 November 1992 - 21 January 1993	56	Panama Into the Atlantic

*If cleaning operations successful on Leg 137

‡If DCS Phase III System Ready

Revised 17 April 1991

APPENDIX 2

Oil Prices May Bottom Out at $15

'Uncertainty Premium' in Effect With War Ove

By ALLANNA SULLIVAN
Staff Reporter of THE WALL STREET JOURNAL

Tenuously balanced inventories of petroleum products as well as uncertainty over when Iraqi and Kuwaiti oil production will return to the market may be putting a floor under the price of crude.

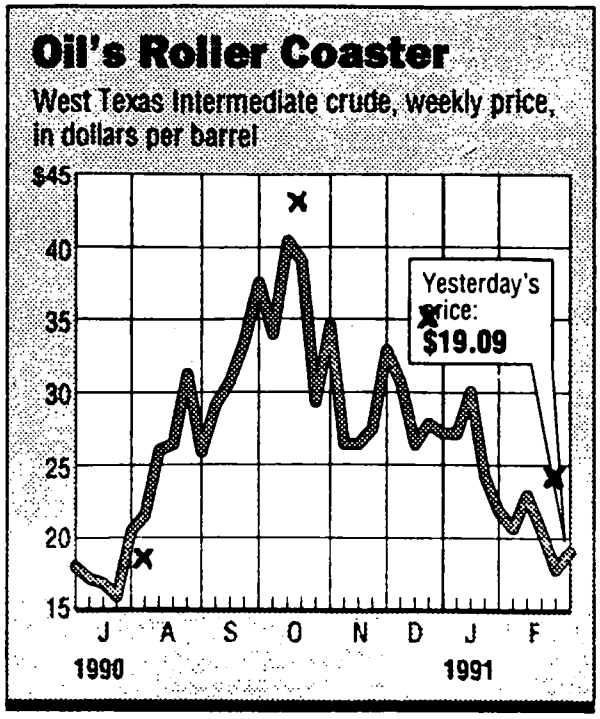
Oil strategists had expected crude prices to tumble to as low as $10 a barrel after hostilities ceased. But now they don't anticipate prices for crudes, such as West Texas Intermediate, to fall below $15 or $16 a barrel.

"The war premium is gone, but now there's an uncertainty premium," said Cyrus Tahmassebi, chief economist for Ashland Oil Co.

And there's a lot to be uncertain about. It's still unclear how long it will take Kuwaiti and Iraqi oil production to return to the market. The price-crash scenario had presumed that Kuwait and Iraq would quickly try to return to prewar production levels. But now with more than one-half of its oil fields set ablaze by the Iraqis, there is little prospect that Kuwait will have much input into the market through the rest of this year.

Indeed, at a closed door meeting in Washington Tuesday, U.S. government officials concluded that Kuwait would be able to pump little more than 200,000 barrels a day by year's end. Before it was invaded by Iraq in August, the tiny country was producing almost two million barrels daily.

And if Saddam Hussein remains in power in Iraq, sanctions forbidding import of Iraqi oil may remain in place. It is believed that Iraq's refineries have been decimated by the bombing of U.S.-led coalition forces. But its oil fields, especially those in the north, may have escaped heavy damage. Thus, the Iraqis may be



prices. With OPEC output now at more than 23 million barrels a day and anticipated second-quarter demand for its crude at 21 million barrels, the stage appears to be set for a decline.

If OPEC doesn't cut production, the cartel's inventories, already voluminous, would continue to build and the price of West Texas Intermediate, the U.S. benchmark crude, would decline to $12 within several months, according to Philip Verleger, a senior fellow at the Institute for International Economics in Washington.

But strategists are hoping that the cartel's members will try to return to its prewar quota of 22.5 million barrels and sell off its hefty inventories in small increments over time. They are hoping that the cartel, when it meets March 11, will work on a plan to divide the Iraqi and Kuwaiti quotas up among those producers that kicked up production to replace the lost output. Such a move, likely temporary, would at least bridge the seasonal second-

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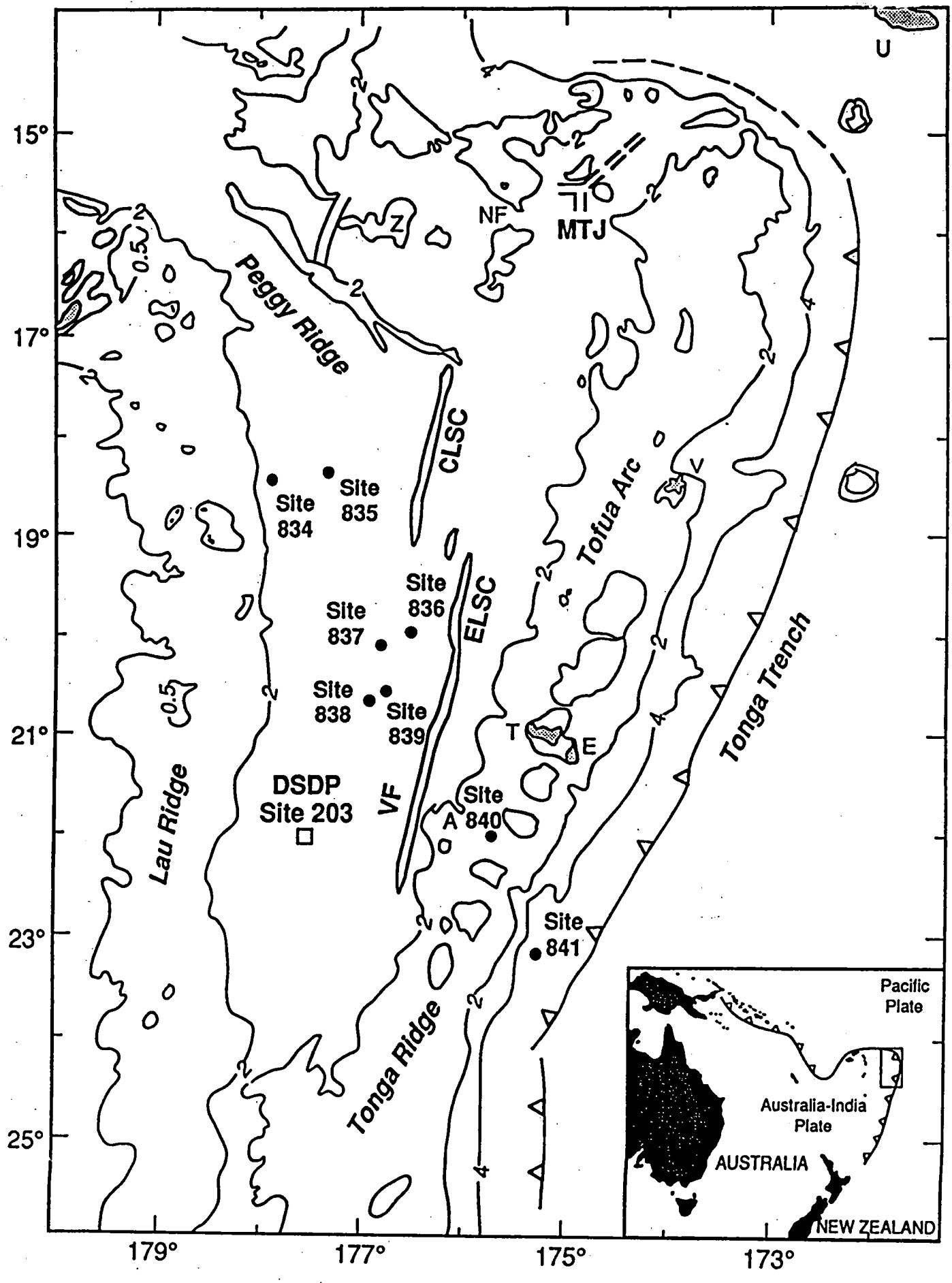
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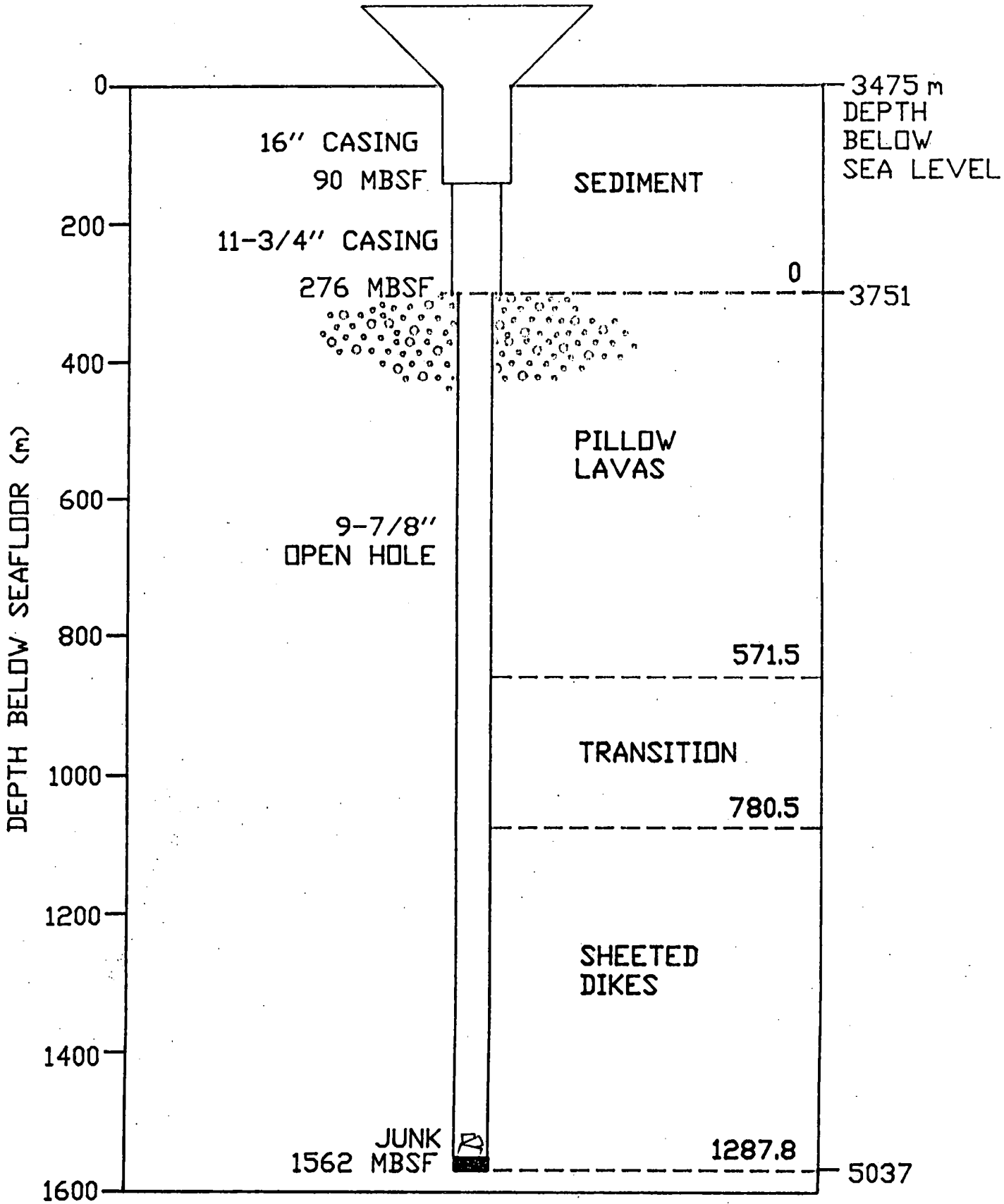
Australia-India Plate
AUSTRALIA
NEW ZEALAND

HOLE 504B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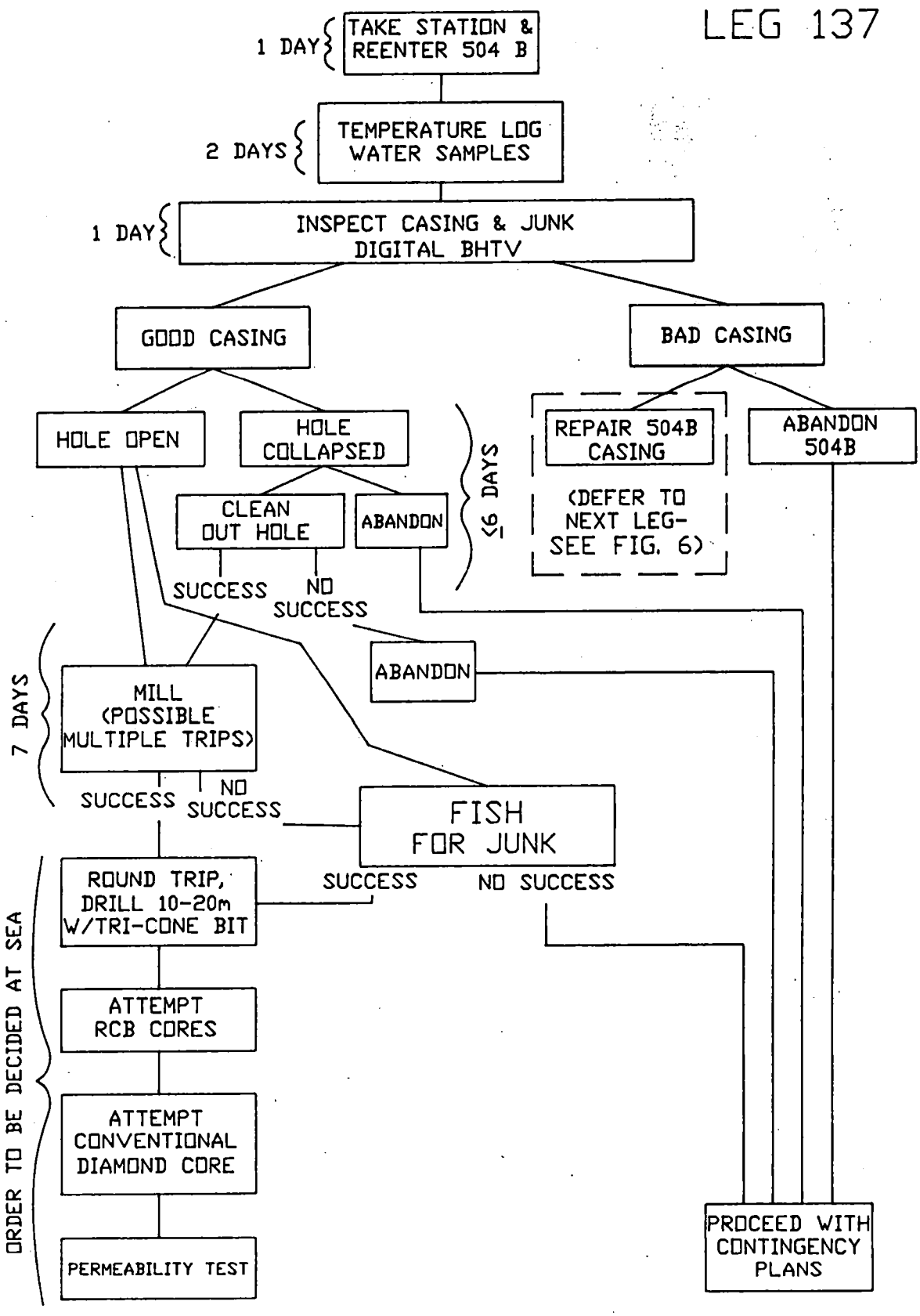
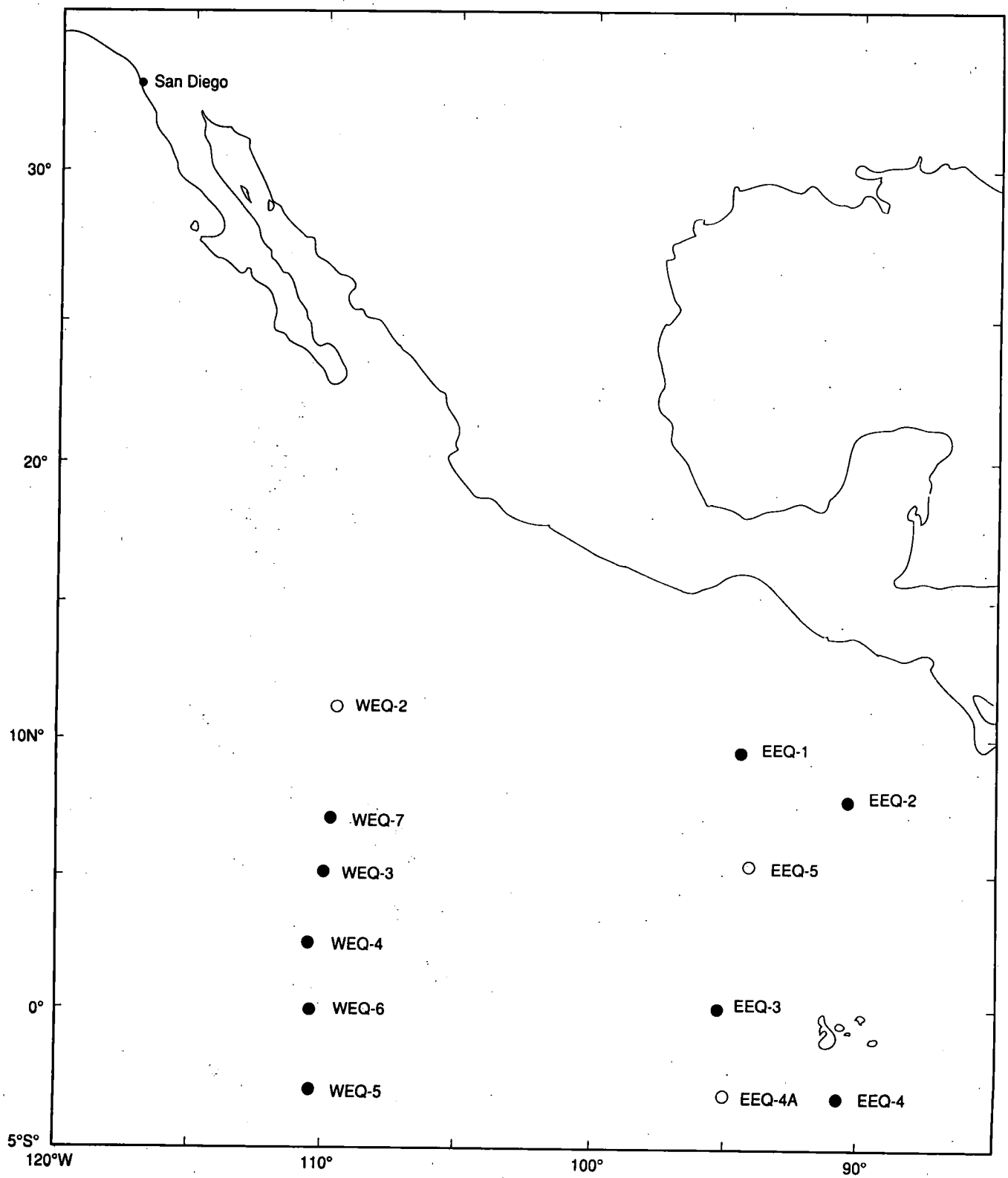


Figure 5. Operational flow chart for Leg 137.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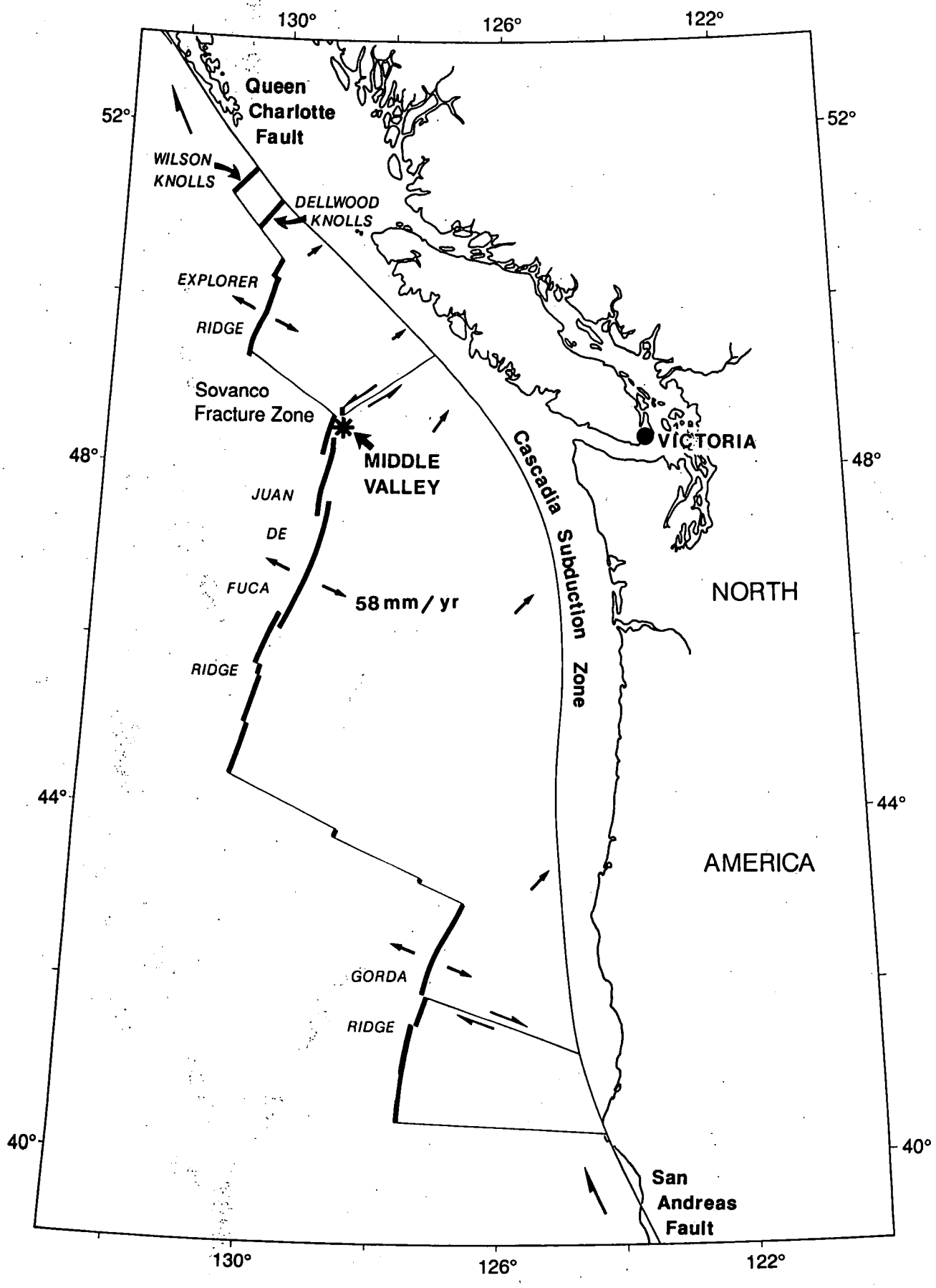
EEQ-4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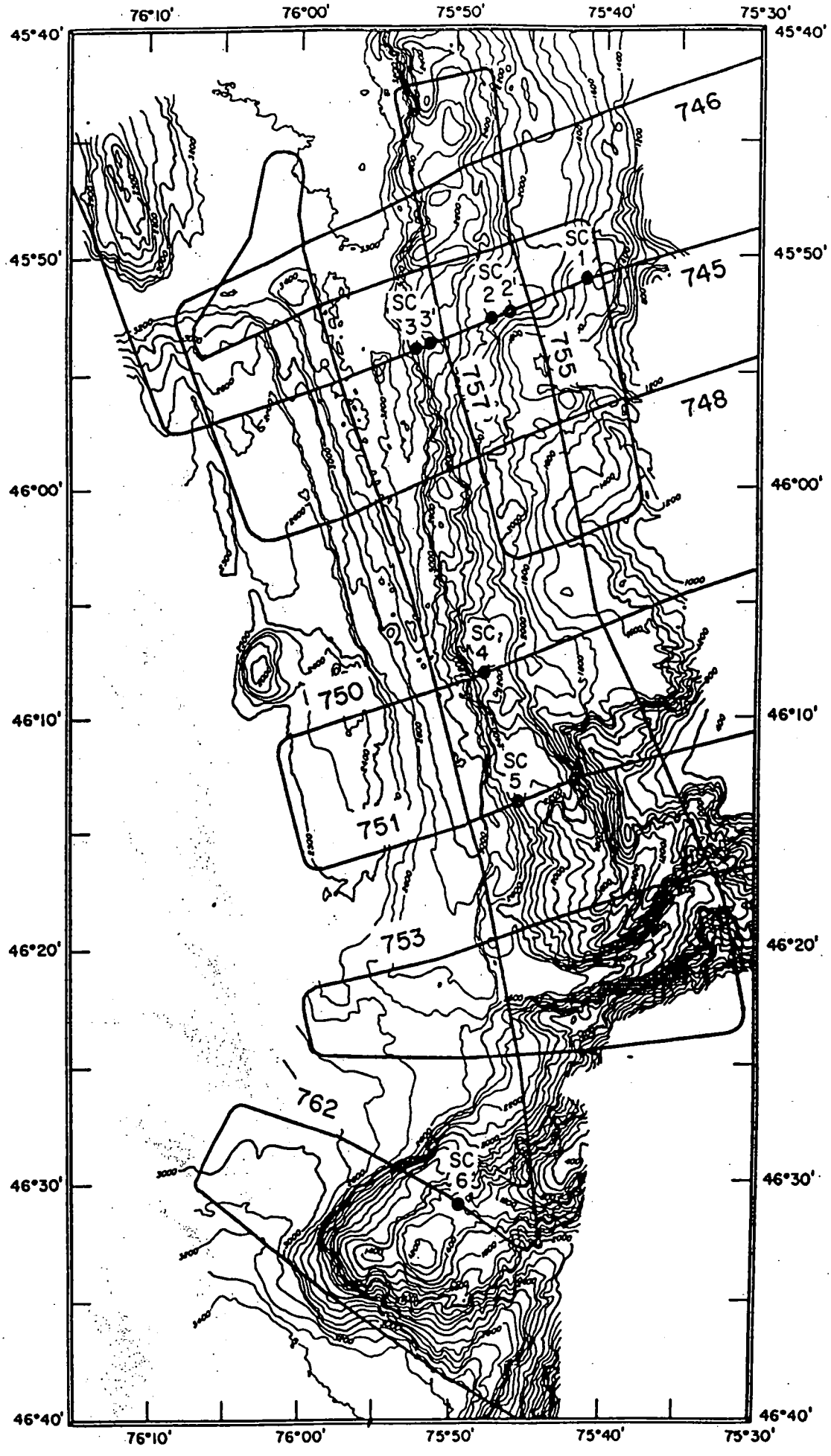
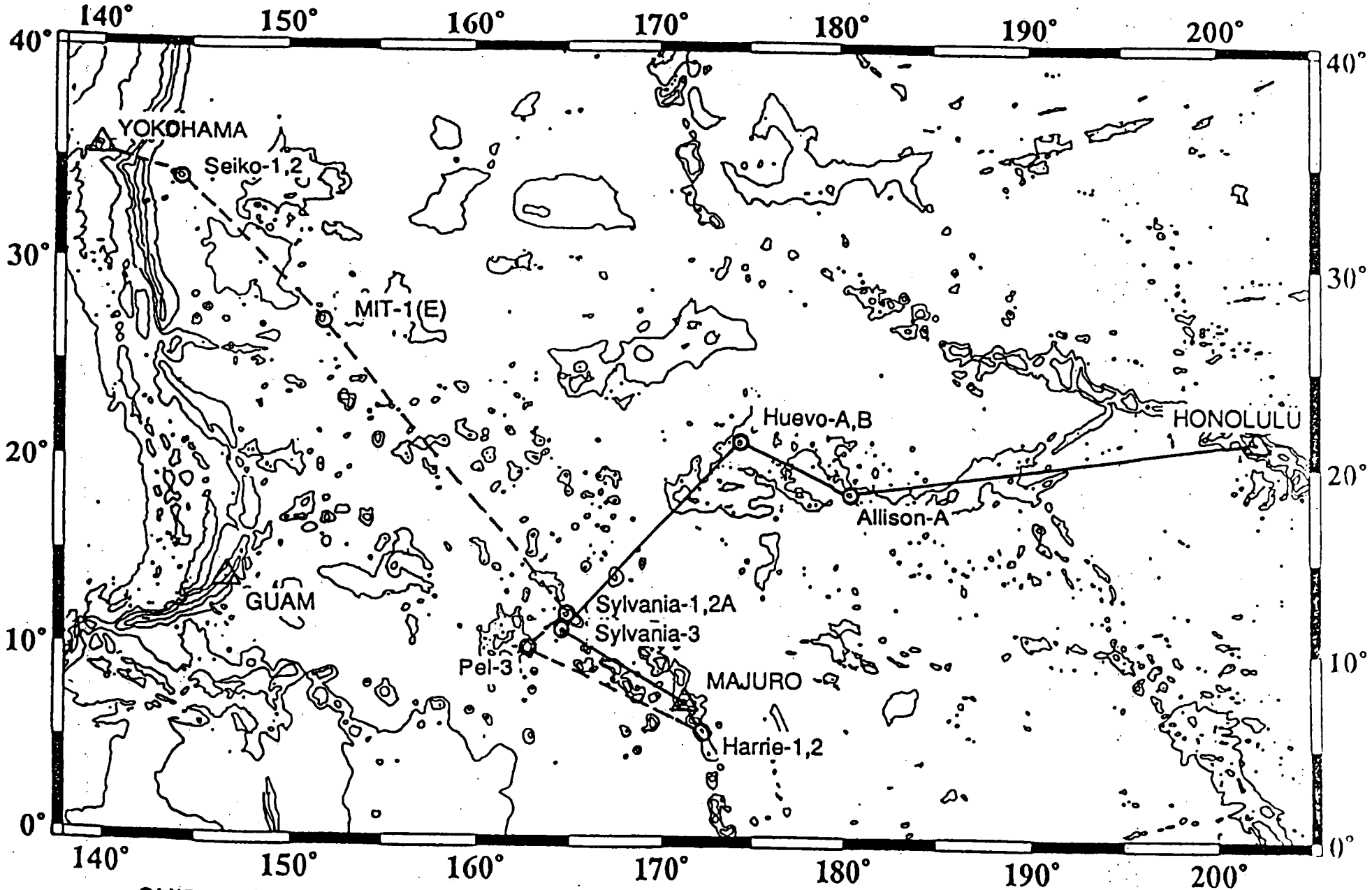


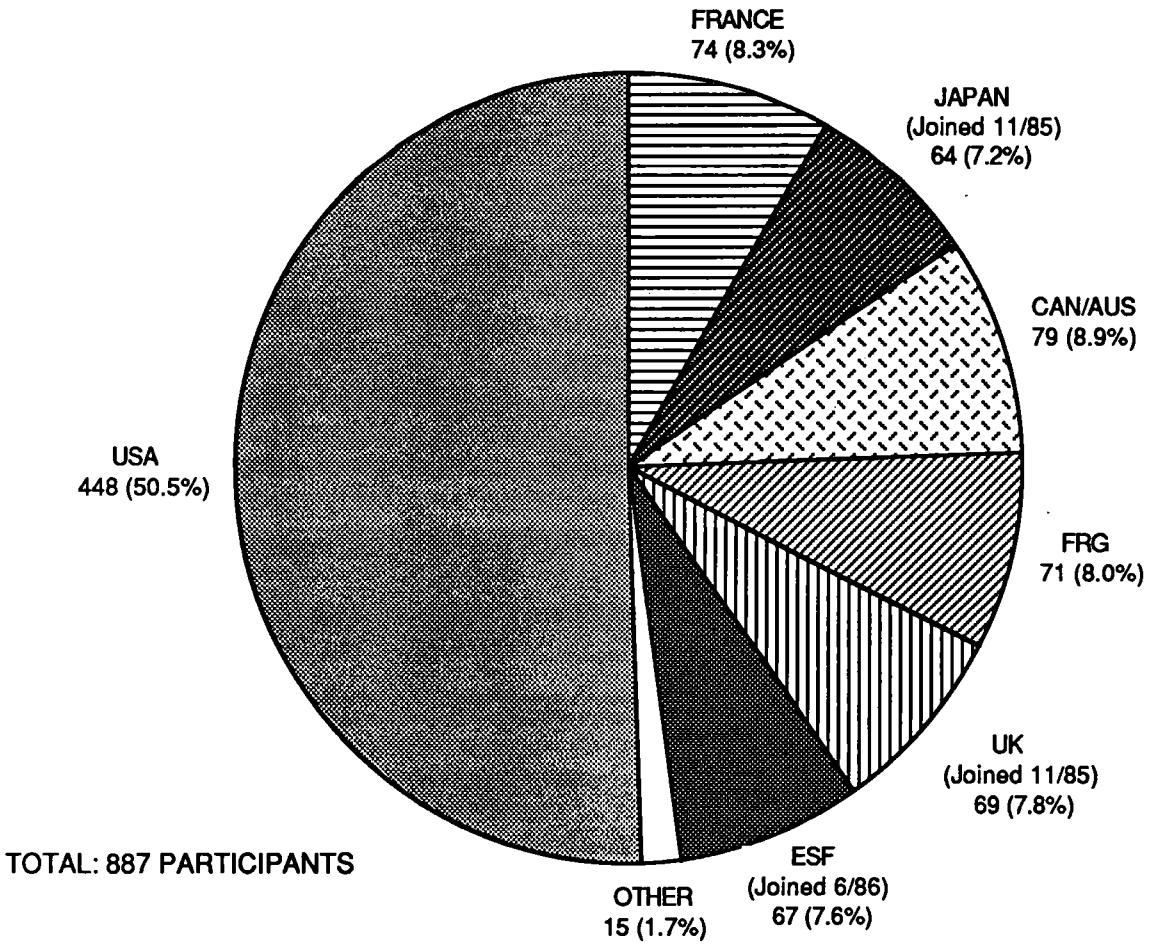
Figure 2. Seabeam map of the CTJ from a survey conducted in early 1988. Data are contoured at 100m interval. Locations of proposed drill sites in the collision zone are shown, superimposed on MCS coverage.



SHIP TRACK RECOMMENDED FOR LEGS 143 (SOLID LINE) AND 144 (DASHED LINE)
BY ATOLLS AND GUYOTS DETAILED PLANNING GROUP

SHIPBOARD PARTICIPANT TALLY
LEGS 101-137

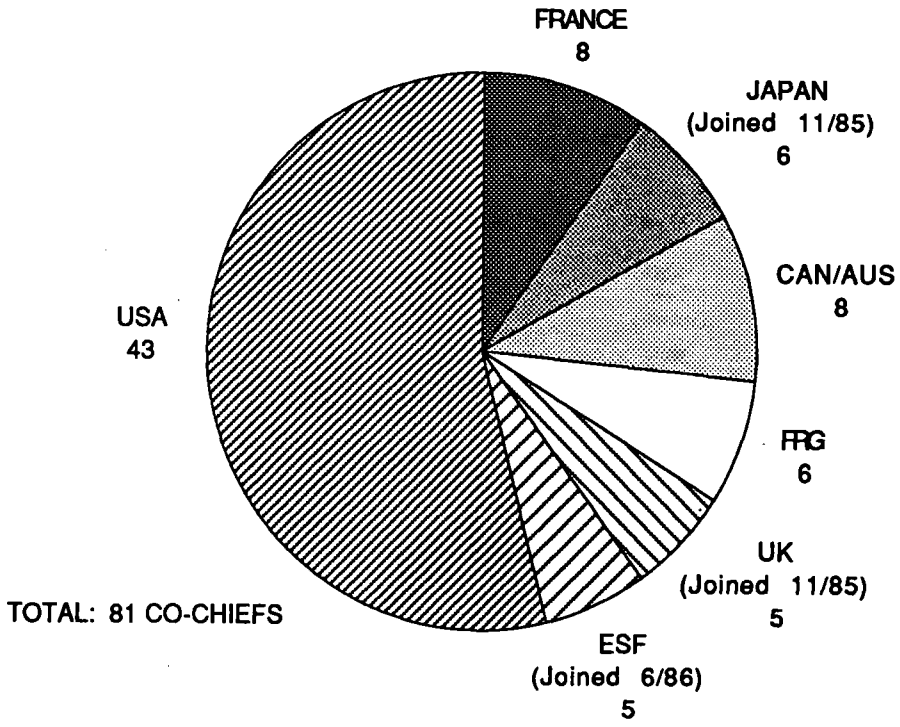
(January 1985-April 1991)



TOTAL: 887 PARTICIPANTS

CO-CHIEF SCIENTISTS

LEGS 101-142



TOTAL: 81 CO-CHIEFS

Proposed Distribution Dates of ODP Volumes - Fiscal Year 1992

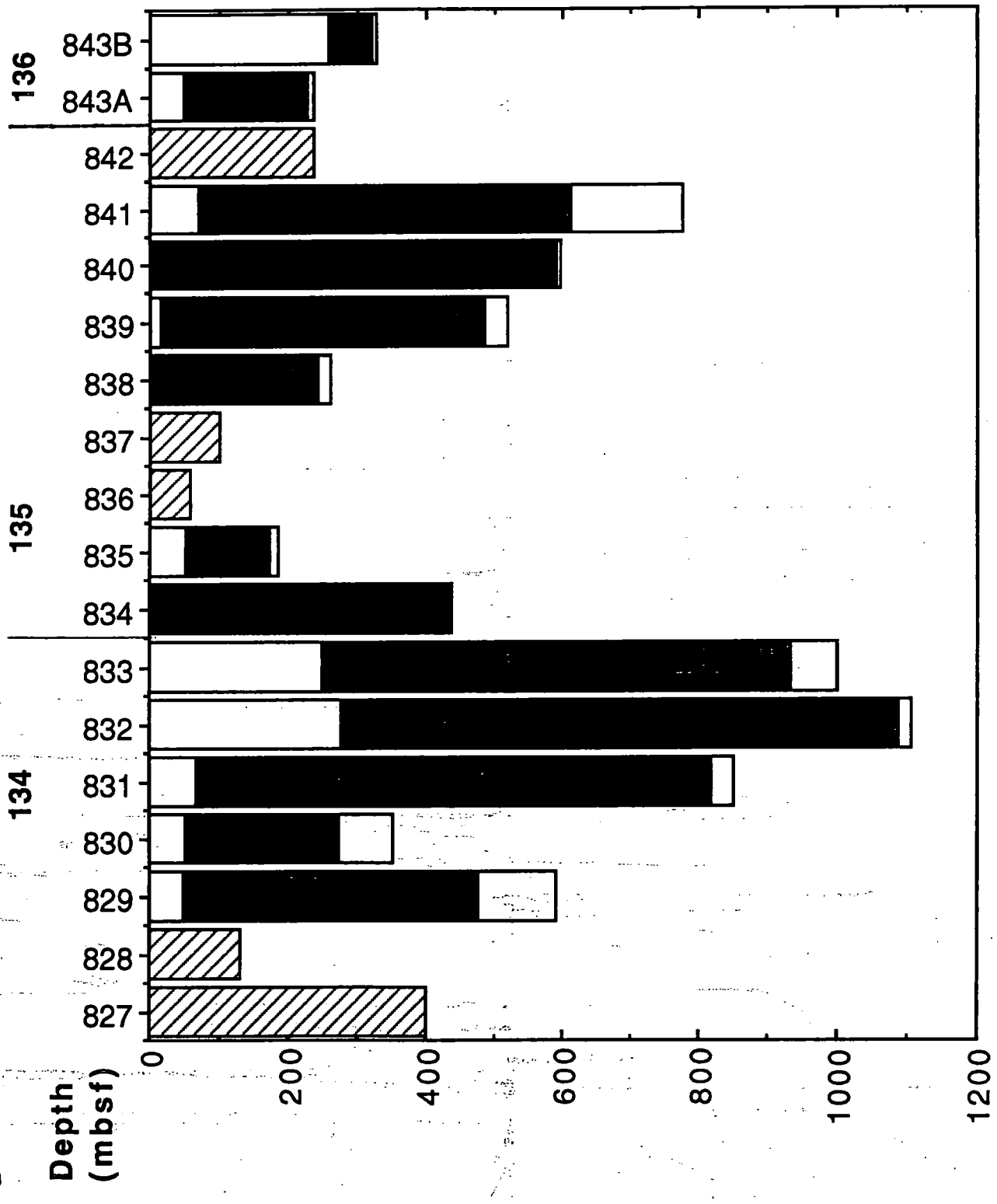
	Initial Reports Volume	Date to Printer	Date Distributed	Months Post-Cruise	*Scientific Results* Volume	Date to Printer	Date Distributed	Months Post-Cruise
OCTOBER								
NOVEMBER					122	9-91	11-91	39
DECEMBER	134	11-91	12-91	12	123	10-91	12-91	37
JANUARY					124	11-91	1-92	36
FEBRUARY	135	2-92	3-92	12	125 126	12-91 12-91	2-92 2-92	34 32
MARCH	136	1-92	3-92	12				
APRIL								
MAY	137	4-92	5-92	12				
JUNE	138	5-92	6-92	12				
JULY					127 128	5-92 5-92	7-92 7-92	35 33
AUGUST								
SEPTEMBER	139	8-92	9-92	12				

April 15, 1991

Proposed Distribution Dates of ODP Volumes - Fiscal Year 1991

	Initial Reports Volume	Date to Printer	Date Distributed	Months Post-Cruise	*Scientific Results* Volume	Date to Printer	Date Distributed	Months Post-Cruise
OCTOBER								
NOVEMBER								
DECEMBER	129	10-90	12-90	11				
JANUARY								
FEBRUARY	130	2-91	3-91	12	114 117	12-90 12-90	2-91 2-91	45 40
MARCH								
APRIL	131	3-91	4-91	10				
MAY	132	3-91	5-91	9	118 119	3-91 3-91	5-91 5-91	41 39
JUNE								
JULY								
AUGUST					121	6-91	8-91	38
SEPTEMBER	133	7-91	9-91	11	120	7-91	9-91	41

April 15, 1991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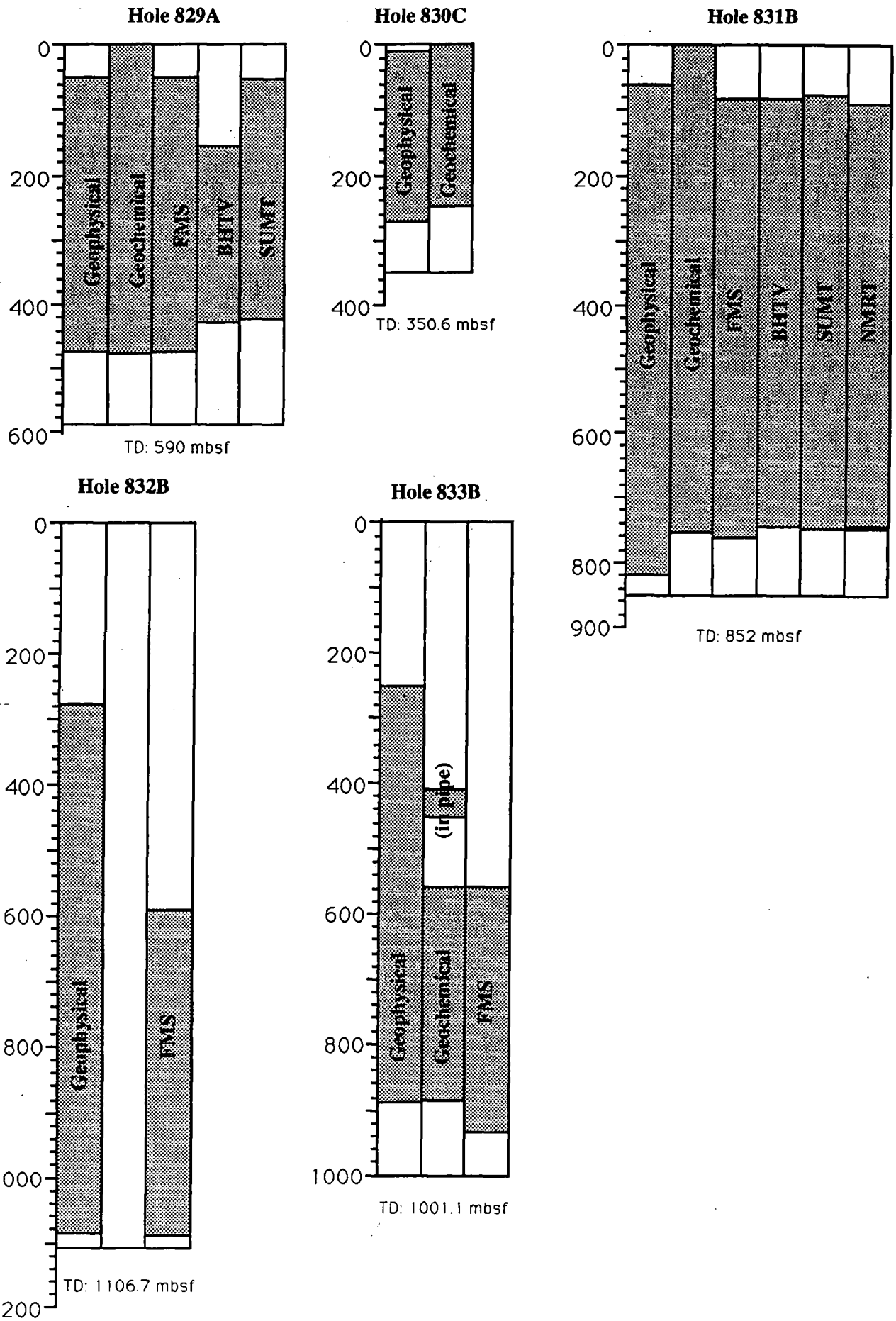
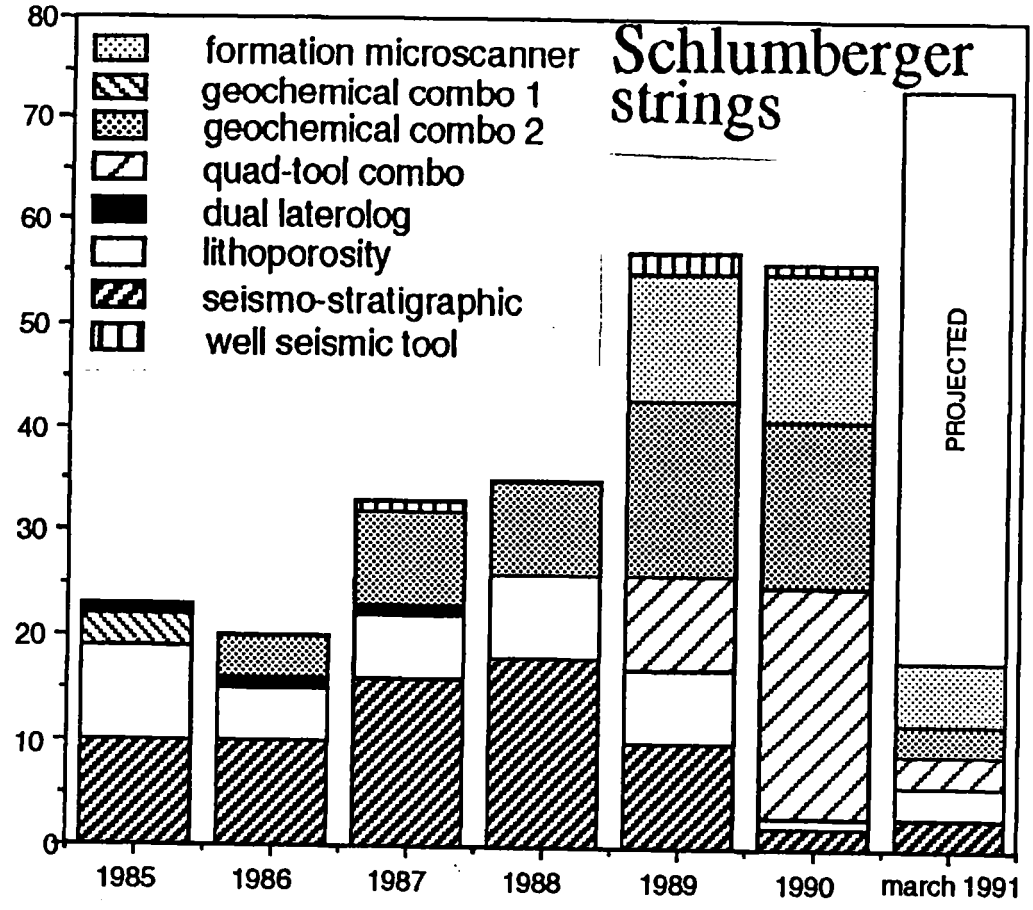
Leg 134 New Hebrides




Schlumberger strings
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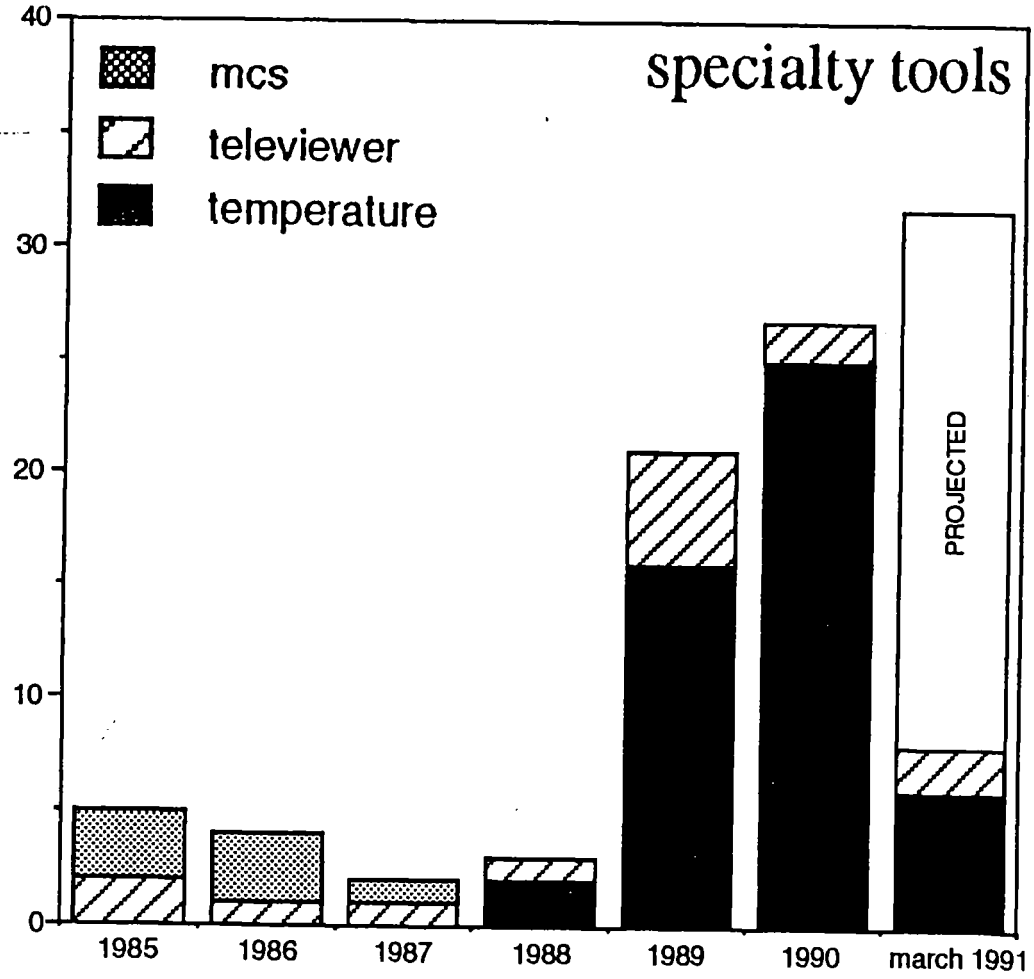
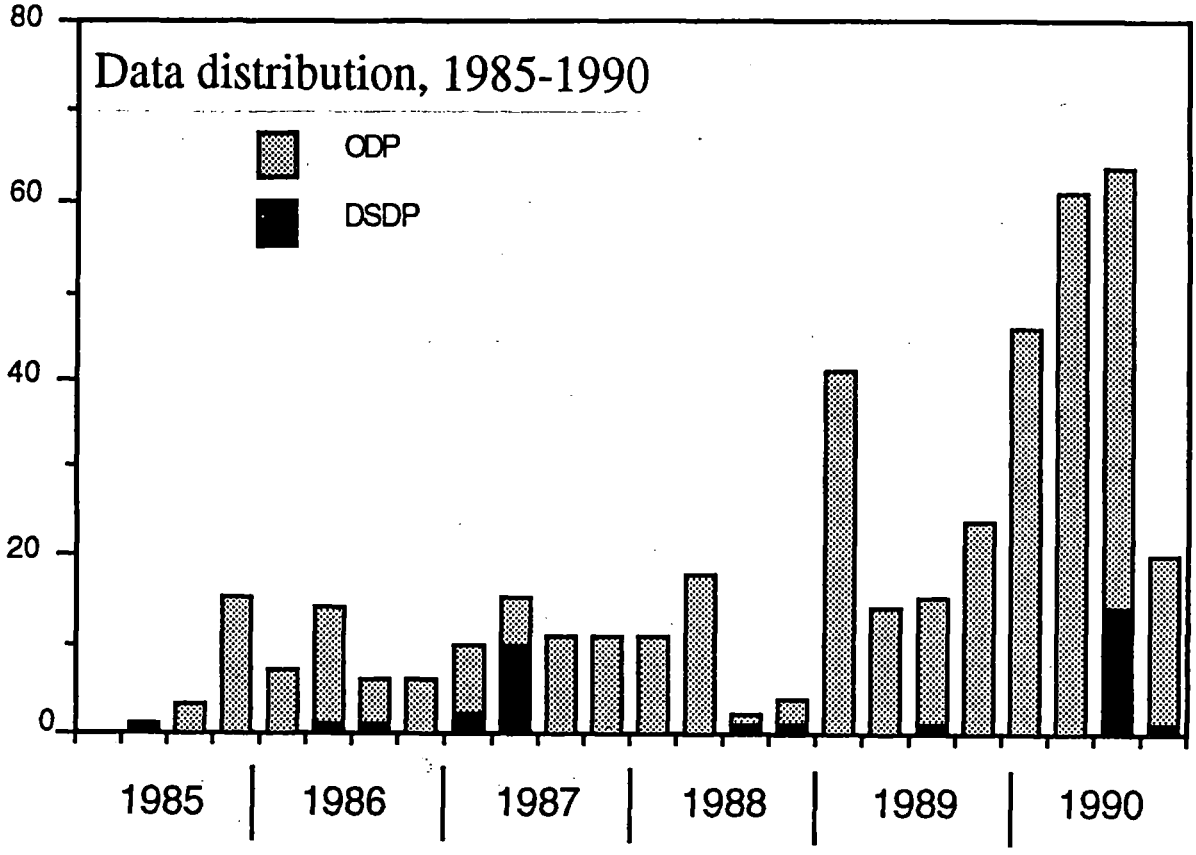
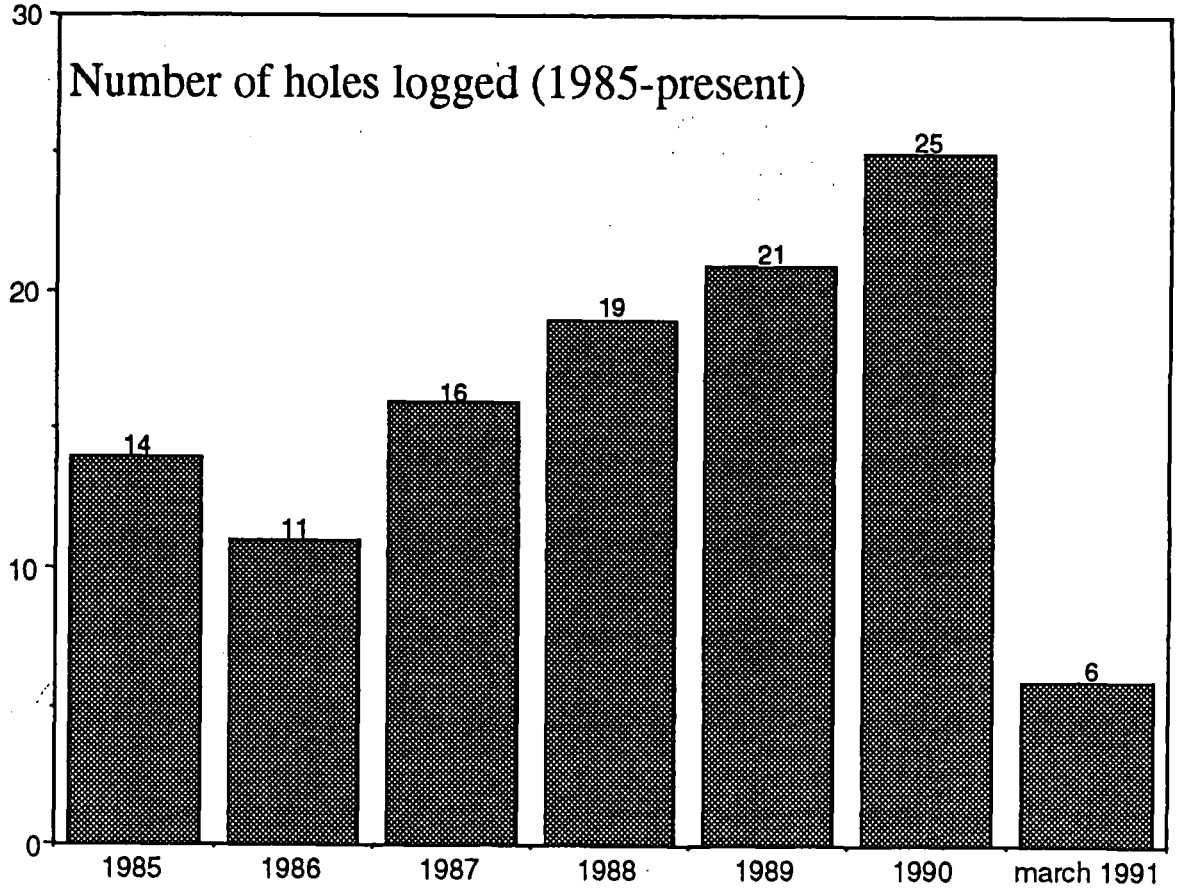
geochemical combo 1
geochemical combo 2
quad-tool combo
dual laterolog
lithoporosity
seismo-stratigraphic
well seismic tool
80
70
60
50
40
30
20
10
0
PROJECTED
1985
1986
1987
1988
1989
1990
march 1991


specialty tools
mcs
televiewer
temperature
40
30
20
10
0
PROJECTED
1985
1986
1987
1988
1989
1990
march 1991


Data distribution, 1985-1990
ODP
DSDP
80
60
40
20
0
1985
1986
1987
1988
1989
1990


Number of holes logged (1985-present)
30
20
10
0
14
11
16
19
21
25
6
1985
1986
1987
1988
1989
1990
march 1991

Downhole Measurements Panel
6-8 Feb. 1991, College Station

1) borehole stability in tectonically active regions
   hole stability can be improved by: casing, wash holes for logging, staged logging, and heavy muds.
   PCOM consideration: devote part of an engineering leg to evaluating hole stability strategies.

2) briefing by TAMU engineers

3) briefing by TAMU computer group on core/log integration
   PCOM or BCOM consideration: increase shipboard computer personnel to achieve objective of core/log integration.

4) FY92 logging recommendations
   August PCOM consideration: return to 801C

5) review of wireline packer and alternative technologies (discussion tomorrow)
   PCOM consideration: specialist meeting to evaluate tool engineering and sample integrity.

6) high-T status review (discussion tomorrow)

NAAG - DPG

(Liaison: M. Leinen)

APPENDIX 4

OBJECTIVES:

NEOGENE RECONSTRUCTION of TEMPORAL & SPATIAL VARIABILITY of the OCEANIC HEAT BUDGET

- CHEM COMP of OCEAN
- EVOL of MARINE ORG
- PRE NEOGENE

Climate change in an ice-free ocean

Circulation in warm ocean

STRATEGY

OPENING OF FRAM STRAIT

SITES WHICH MONITOR DOWNSTREAM EFFECTS of DEEP FLOW THRU GATEWAYS

TRANSECTS TO MONITOR VARIABILITY

JUSTIFICATION

ORIGIN of the ARGUABLY MOST IMPORTANT WATER MASS

NADW

INFERRED CULPRIT

SALT OSCILLATOR — KEY ROLE - CO_2

STEP CHANGES IN DEEPWATER CHARACTER

= INFERRED

~~HIGH~~ LATITUDE MILANKOVITCH

METHODS

DOUBLE APC

APPENDIX 1

MEMBERS OF NORTH ATLANTIC-ARCTIC DETAILED PLANNING GROUP

William Berggren (WHOI/OHP)

Rudiger Henrich (FRG)

Eystein Jansen (ESF/OHP)

Larry Mayer (Canada)

Peta Mudie (Canada)

William Ruddiman (LDGO; Chairman)

Torre Vorren (ESF)

LIAISONS PRESENT AT FEBRUARY 1991 MEETING:

Margaret Leinen (URI; from PCOM)

Mitchell Lyle (LDGO; from borehole group)

Tim Francis (ODP, TAMU)

NORTHERN GATEWAY REGION

Ice problem

Timing Weather

ARCTIC / GREENLAND - NORW SEA

FRAM STRAIT 2600 m sill

TIMING

Look at thick sed drape on Yermak Plateau
1, 4, 5

DEPTH EVOL From Strait 1b, 2

Thanks to GEOMAR/Kiel / Norway many cores & good seismics

GREENLAND MARGIN

formation of E. Greenland Current

most imp surface water infl. on N. Sea & water mass formation

deep water formation

EGM 2, GREEN 2, EGM d
L history of Greenl. glac

GREENLAND - NORWAY TRANSECT

depth transect for thermal gradient, chemistry/bottom water

Connects Voring Plateau Log 104 sites ē

Greenland margin

frontal motion

Paleogene

ICEP 1
2, 3, 4

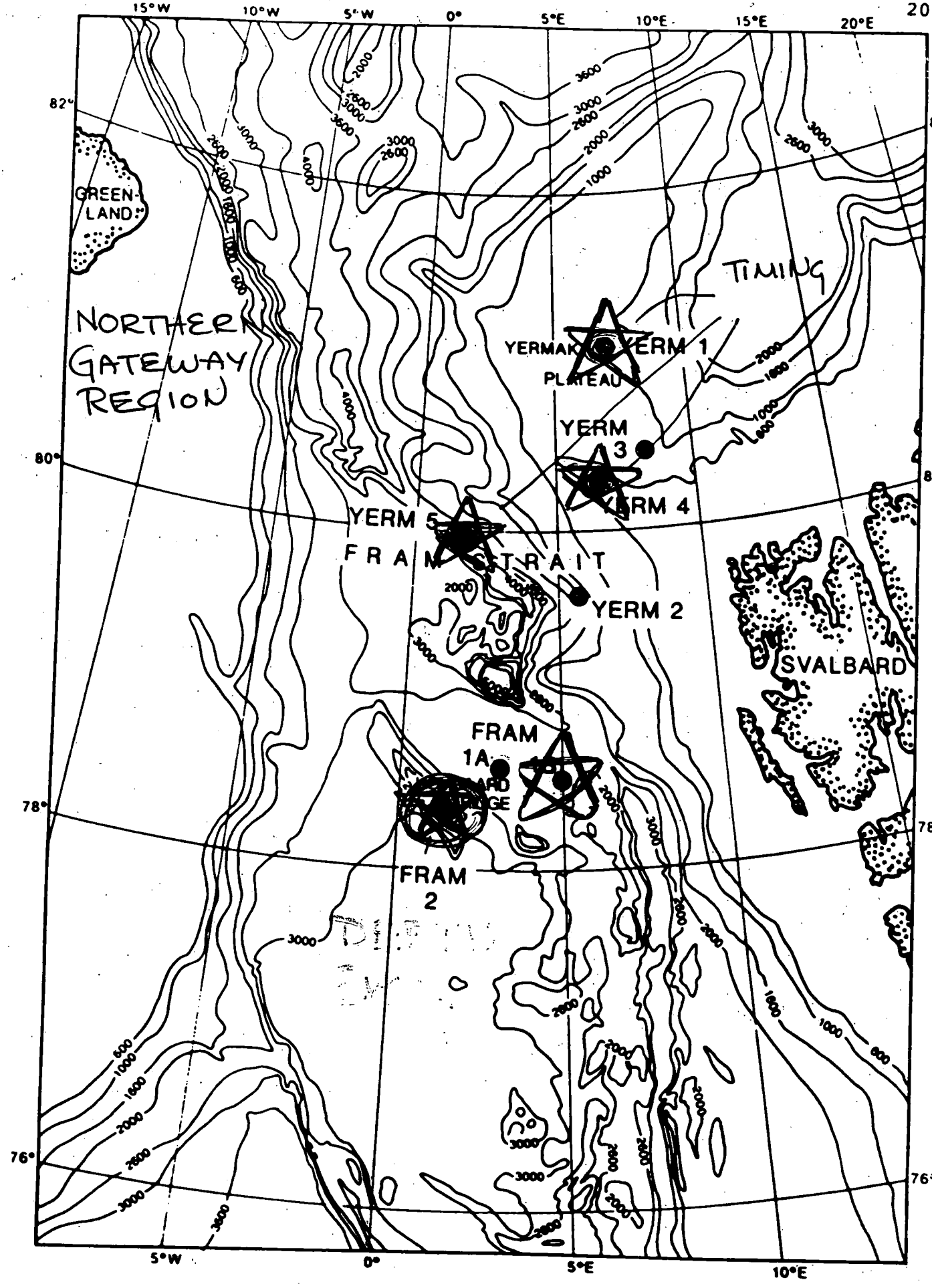


Figure 3. Bathymetry in meters and location of FRAM and YERM sites (Fig. 4 from ODP proposal 320).

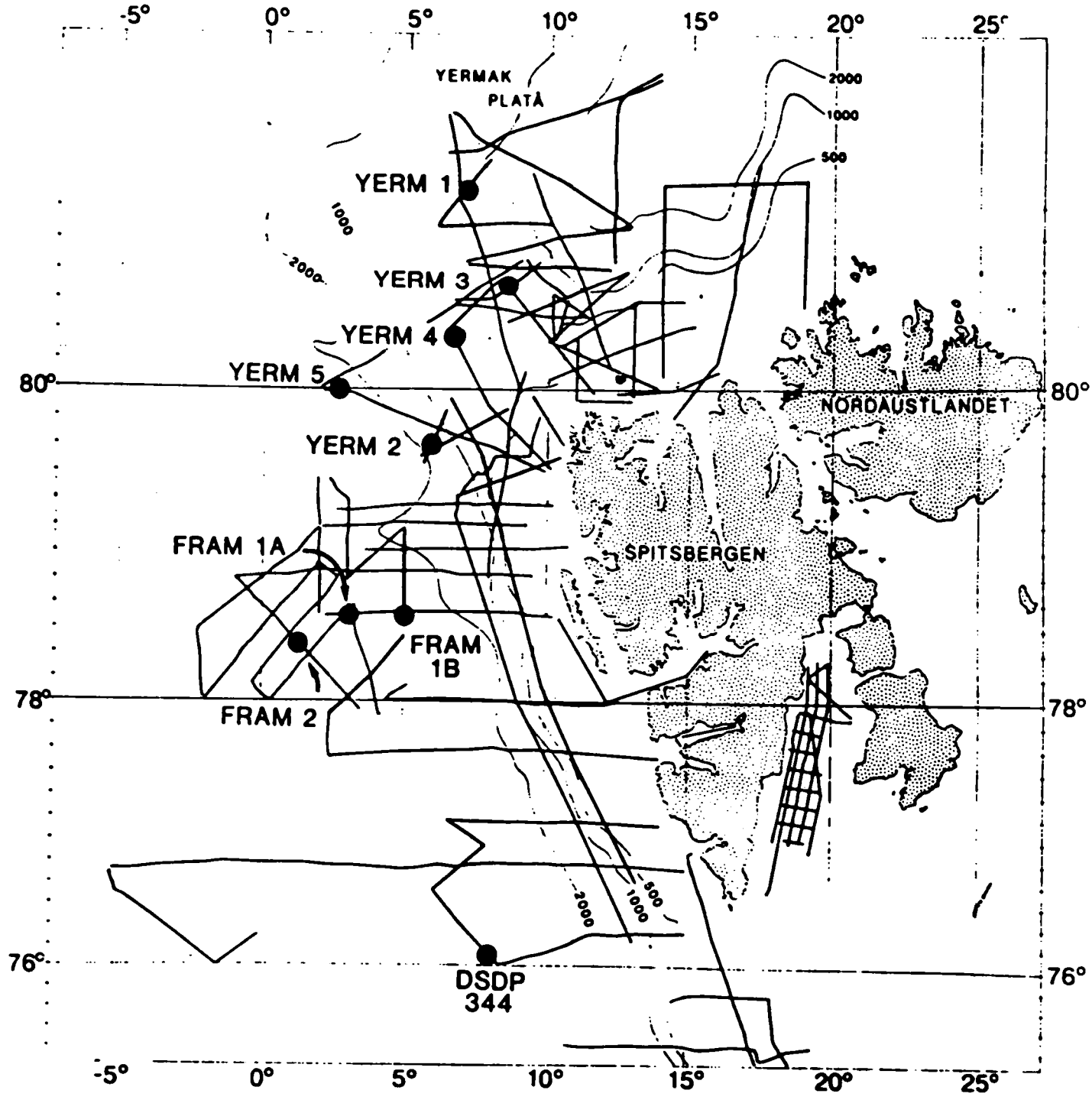


Figure 4. Multichannel seismic lines and locations of FRAM and YERM sites (Fig. 5 from ODP proposal 320).

Figure 5. Location and bathymetry of Site ARC 2a (Fig. A2-1 from ODP proposal 305).

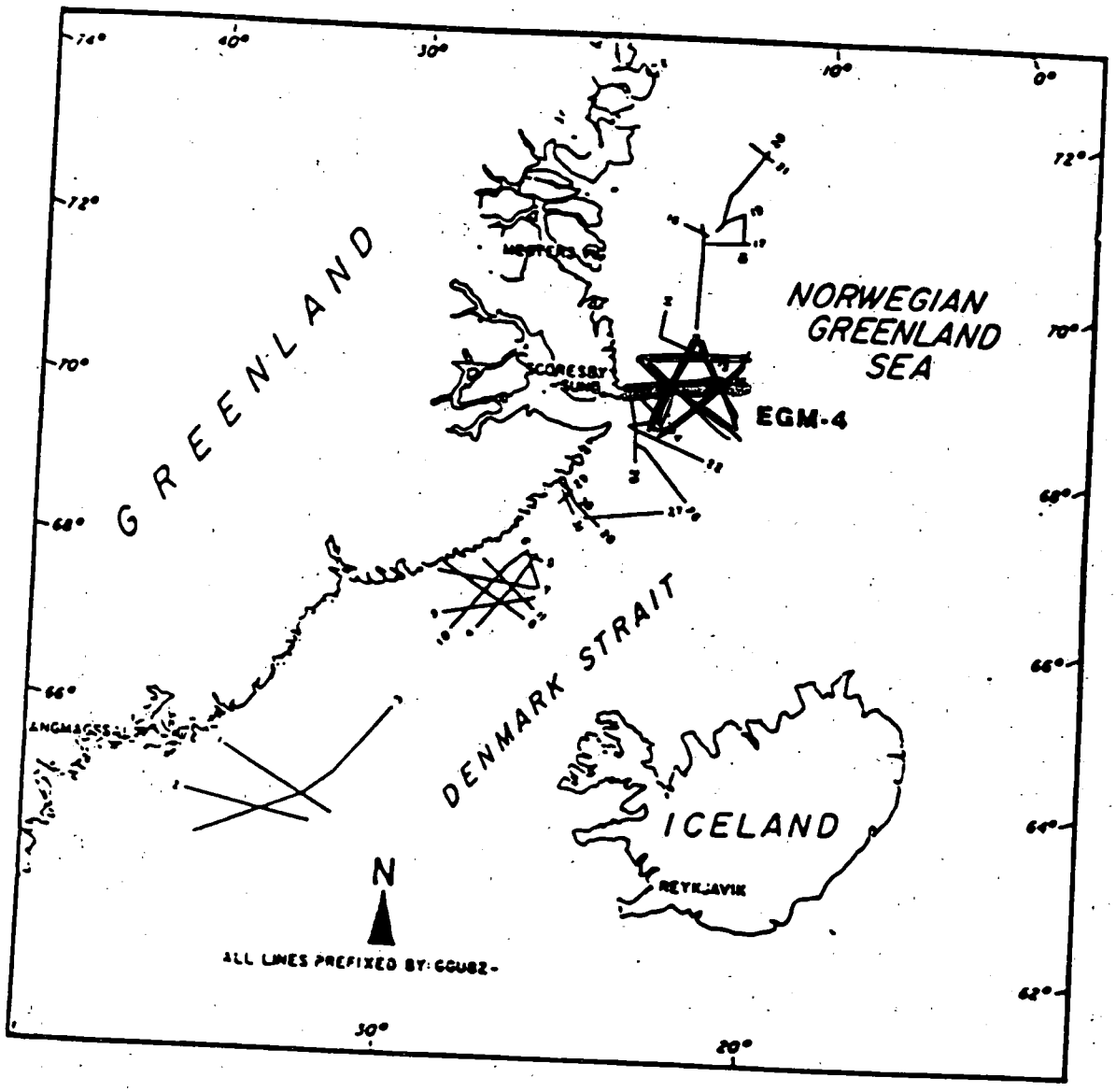


Figure 7. Multichannel lines and location of Site EGM 4 (Fig. 10 from ODP proposal 336).

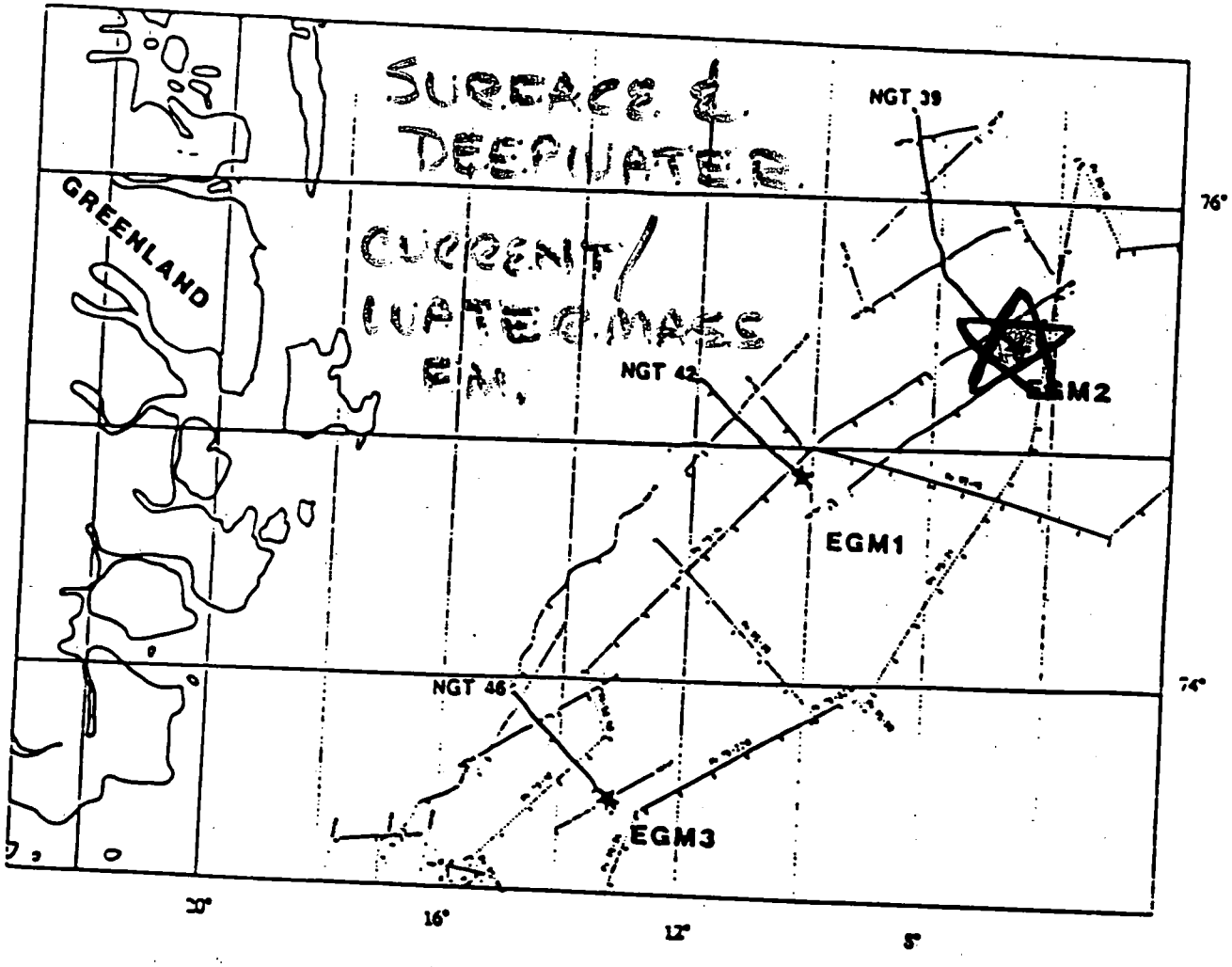


Figure 6. Multichannel seismic lines and locations of EGM Sites (Fig. 6 from ODP proposal 336).

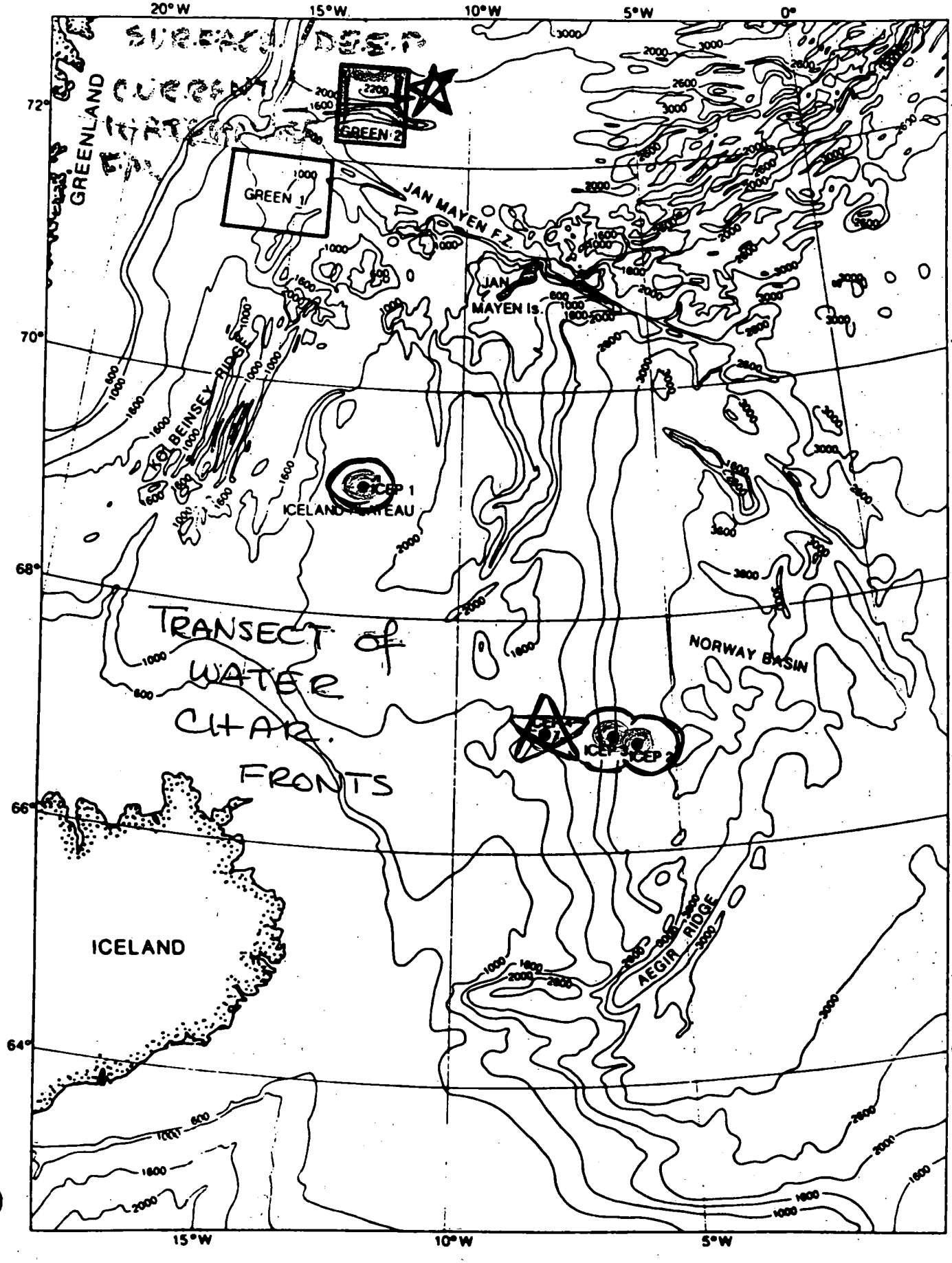


Figure 8. Bathymetry (in meters) and location of Green and ICEP sites (Fig. 10 from ODP proposal 320).

SOUTHERN GATEWAY

overflow ⇒ supply of NADW to world ocean

testing specific hypotheses regarding overflow

paired sites on N & S side

Denmark St. — need survey FEQ?
Iceland Faroe Ridge NIFR 1
SIFR need surveys

Identified further probs:
Nordic Sea fans
High Arctic

DRILLING PROPOSAL:

2 legs

normalize ir all except Y1, 5, Arc2 open

1) Optimize opp for the highest lat. sites & do whole program — almost year round ice cover

2) needs a network of sites = large #

Y1 & Y5 only in favorable years

Weather window — August / Sept each year

Leg 1 = highest priority sites

if weather interferes, drill NIFR 1; then rest of leg 2 in order

Leg 1 Highest priority = YERM FRAM 1 EGM

ice forecast & surveillance

ice breaker

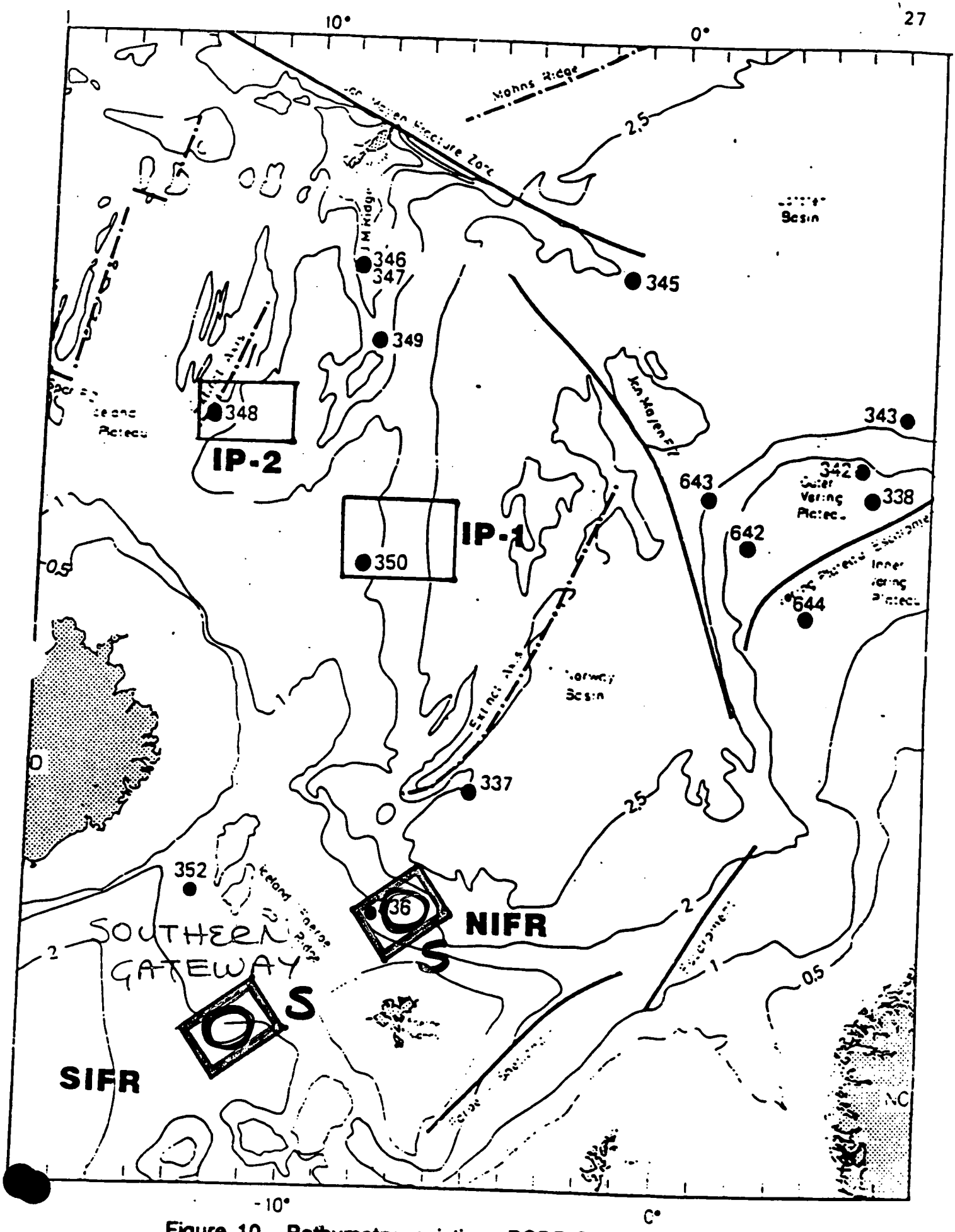


Figure 10. Bathymetry, existing DSDP/ODP sites, and NIFR and SIFR (south Iceland-Faeroe Ridge) target areas (Fig. 12 from ODP proposal 338).

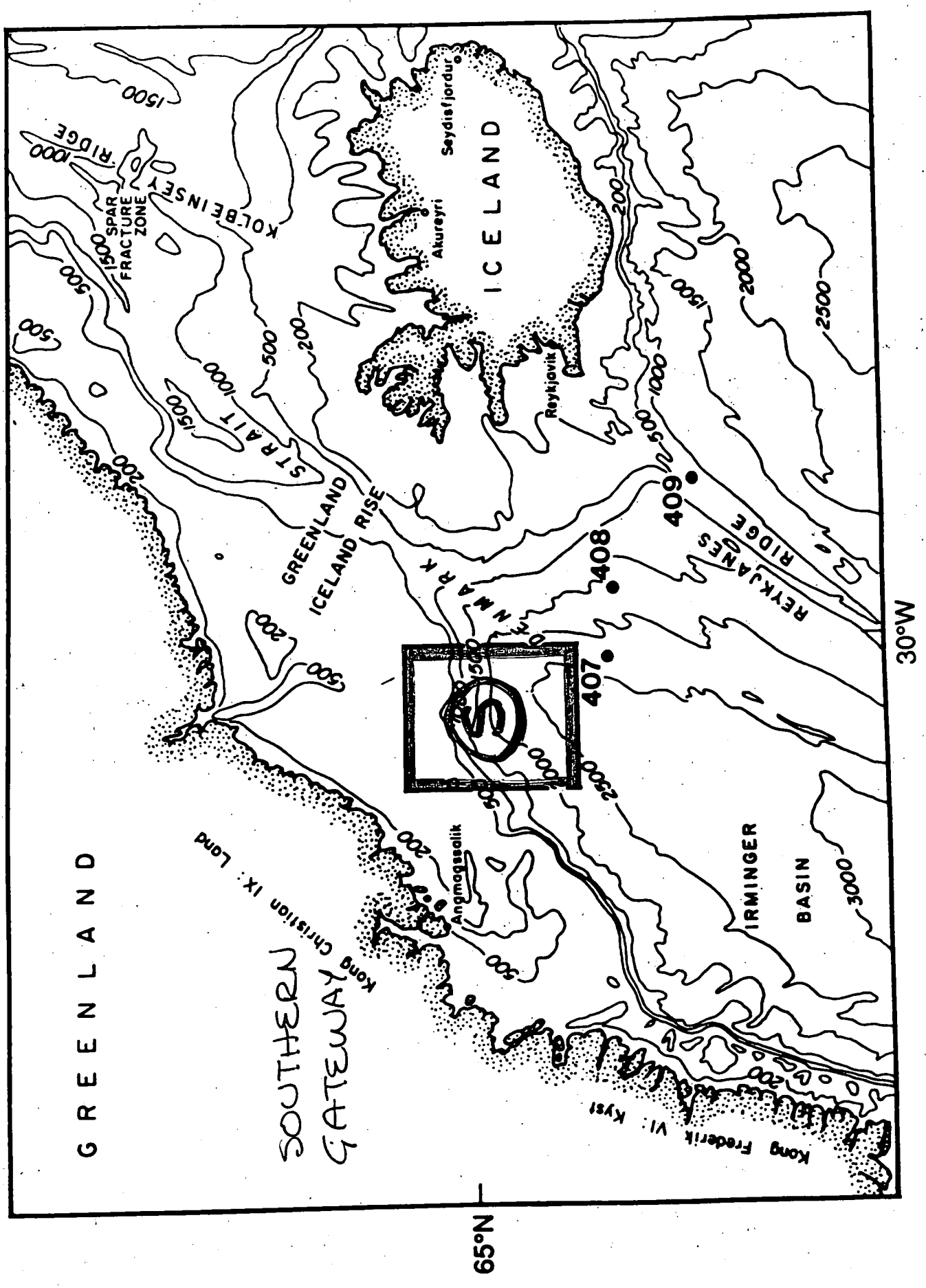


Figure 11. Bathymetry and location of Denmark Strait (DENS) target area (Fig. 17 from ODP proposal 320).

NARM-DPG Report (Liaison: B. Tucholke) **APPENDIX 5**

PURPOSE: PRODUCE A PRELIMINARY, BUT RELATIVELY COMPLETE SCIENCE AND DRILLING PLAN TO COVER THE IMPORTANT PROCESSES OF RIFTED-MARGIN FORMATION.

AREA: NORTH ATLANTIC NORTH OF EQUATOR
(NOT CONSIDERED: SHEAR MARGINS
MEDITERRANEAN)

SUBJECT MATERIAL: SEVEN PROPOSALS WITH PRIOR REVIEW BY THEMATIC PANELS
(NOT CONSIDERED: 6 UNREVIEWED PROPOSALS)

BACKGROUND MATERIAL:
COSOD II
ODP LRP
TECP WHITE PAPER
MEMO. ON VRM'S
LIPS WORKSHOP REP'T.

NEEDED:
- CONCRETE DRILLING PLANS
  OPTIMUM SITING, TIME ESTIMATES, LOGGING NEEDS
- ADVICE ON ADDITIONAL REGIONAL AND SITE SURVEY
- INTEGRATION OF LATE PROPOSALS
- MORE COMPLETE SPECIFICATION OF LONGER-TERM PRIORITIES
- PROSPECTUS SYNTHESIZING ALL INPUT (INCLUDING THEMATIC & SITE SURVEY PANELS)

OBJECTIVE OF DRILLING

DESCRIPTION/UNDERSTANDING OF UPPER CRUSTAL TO UPPER MANTLE IGNEOUS AND DEFORMATION PROCESSES ASSOCIATED WITH, AND CAUSING, CONTINENTAL BREAKUP AND HOW THEY RELATE TO DEEPER MANTLE PROCESSES AND DYNAMICS.

ROLE OF DRILLING

DIRECT CHARACTERIZATION OF

- NATURE OF ROCK RECORD
- EMPLACEMENT ENVIRONMENT
- DEFORMATION HISTORY
- TIMING

STRATEGY

⇒ CONJUGATE-MARGIN PAIRS

- ALONG-MARGIN VARIABILITY RELATED TO SEGMENTATION (GENERALLY A LONGER-TERM STRATEGY)
- DEEP, PROMINENT REFLECTIONS THAT MAY REPRESENT LOW-ANGLE DETACHMENT (LONG-TERM)

LOCATIONS CONSIDERED

CONJUGATES –

- NEWFOUNDLAND BASIN – IBERIA ABYSSAL PLAIN
- NORTH FLEMISH CAP – GOBAN SPUR
- LABRADOR – SW GREENLAND
- SE GREENLAND – HATTON BANK
- NE GREENLAND – VØRING PLATEAU

DEEP REFLECTIONS –

- GALICIA BANK (S REFL.)

SELECTION OF CONTRASTING MODES OF CONTINENTAL BREAKUP ENCOMPASSING WIDE RANGE OF VARIABLES:

- MULTIPLE RIFT, NON-VOLCANIC, WIDE ZONE OF CRUSTAL THINNING
- SINGLE RIFT, VOLCANIC, THICK VOLCANIC/IGNEOUS CRUST

TOP PRIORITY TRANSECTS

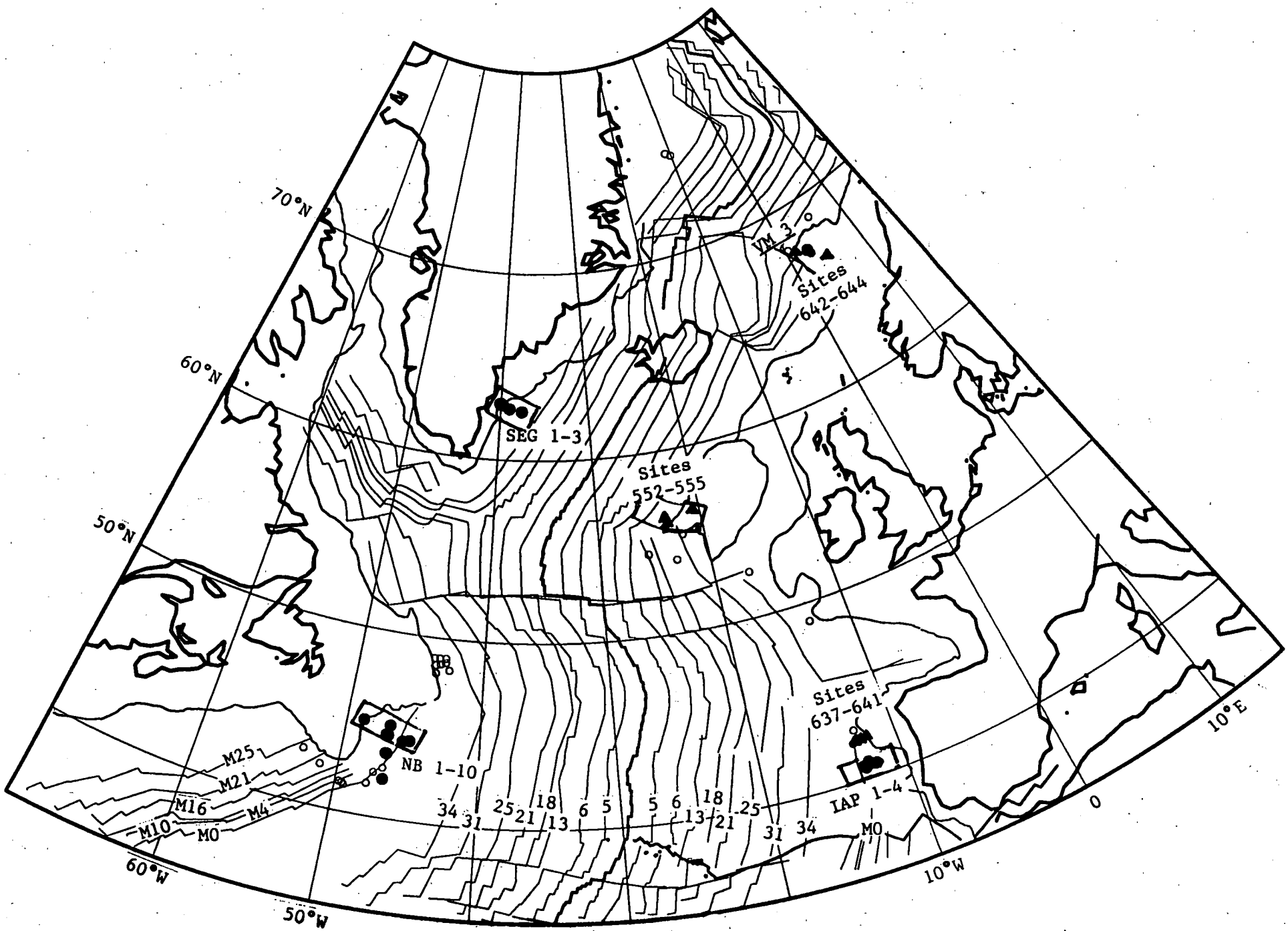
- NEWFOUNDLAND BASIN – IBERIA ABYSSAL PLAIN
- SE GREENLAND – HATTON BANK (+ 1 VØRING SITE)

LONG-TERM PRIORITY

- DEEP DETACHMENT (S REFLECTOR)

SECOND PRIORITY

- N. FLEMISH CAP – GOBAN SPUR
- (NE GREENLAND – VØRING)
- ALONG-RIFT VARIABILITY


70°N
60°N
50°N
60°W
50°W
10°W
0
10°E
VM 3
Sites
642-644
SEG 1-3
Sites
552-555
Sites
637-641
NB 1-10
IAP 1-4
M25
M21
M16
M10
M4
M0
34 31 25 21 18 13 6 5
5 6 13 18 21 25 31 34
M0

SE GREENLAND - HATTON BANK TRANSECT

- SIMPLE DEVELOPMENT OF STRATIGRAPHIC/STRUCTURAL RELATIONS
- MORE NEARLY CONJUGATE LOCATIONS
- COMPLETE ACCESSIBILITY

GOAL: SYSTEMATIC PROGRESSIVE SAMPLING OF VOLCANIC AND SEDIMENTARY ROCKS THROUGH THE PERIOD OF BREAKUP AND EARLY IGNEOUS CRUSTAL ACCRETION AND INTO THE PERIOD OF NORMAL S.F.S.

SAMPLING:
- LANDWARD SDRS FEATHER EDGE
- SEAWARD EDGE SDRS
- EDGE OF NORMAL OCEANIC CRUST
- (INTERMEDIATE POSITION IN SDRS)

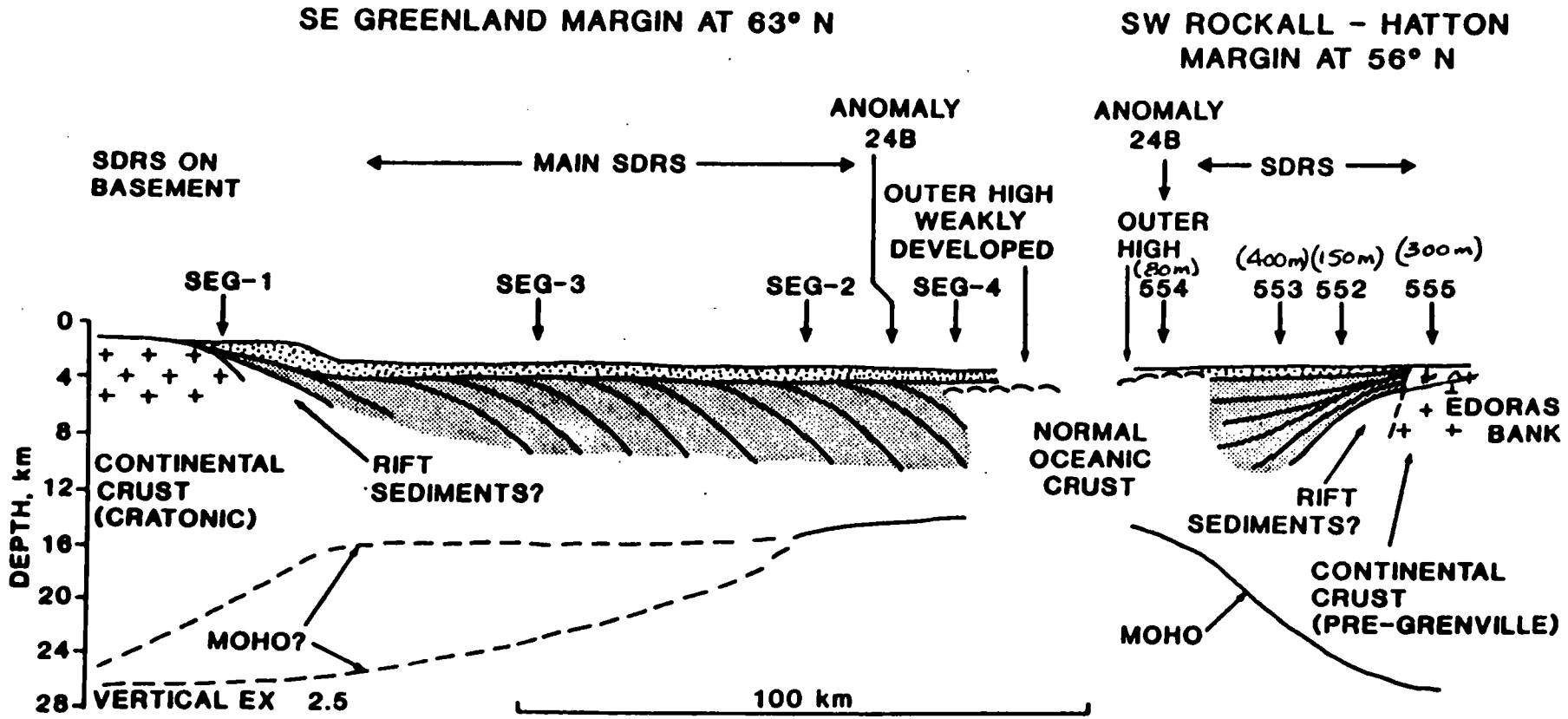
CA. 500M PENETRATION IN SDRS
- TO OBTAIN SAMPLES PROXIMAL TO SOURCE
- TO IMPROVE WELL-TO-WELL CORRELATION

- ONE "LONGITUDINAL" HOLE AT YORING PLATEAU

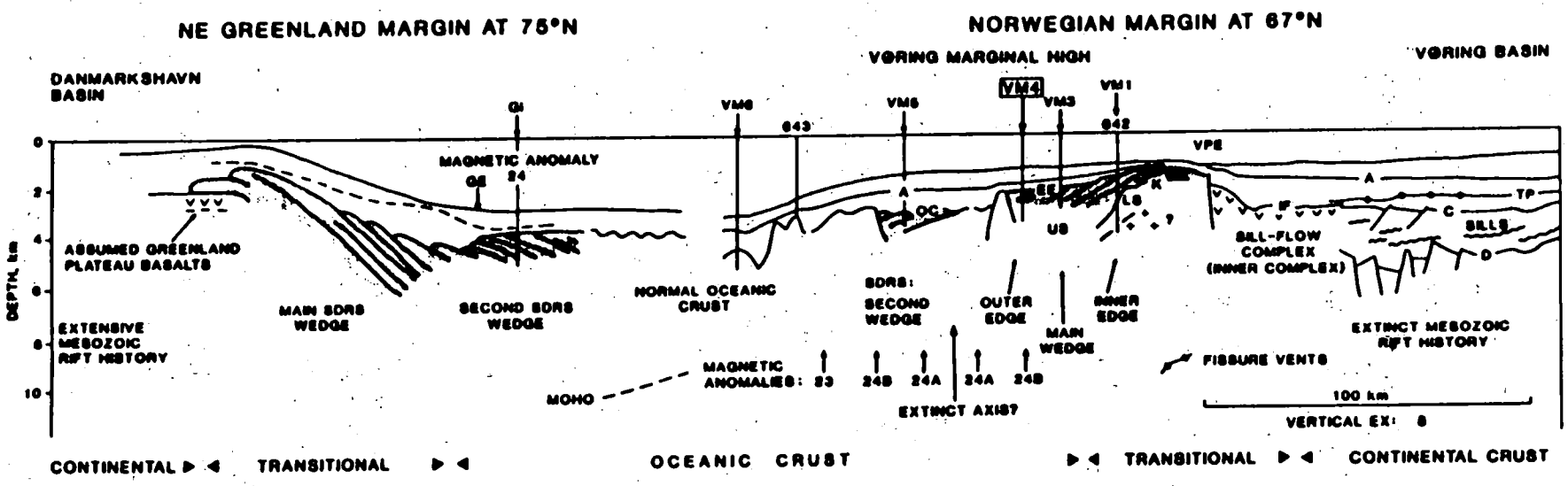
EXPECTED RESULTS:

- GEOCHEMICAL/VOLUMETRIC CHARACTERIZATION
- FLEXURAL DEFORMATION
- LATERAL VISCOUS FLOW
- NATURE OF MAGMA CHAMBERS/DEEP MANTLE
- COOLING/THERMAL SUBS. HISTORY
- TRANSITION TO NORMAL S.F.S. CRUST
- ALONG-AXIS VARIABILITY

VOLCANIC RIFTED MARGINS - 1. PRIORITY TRANSECT



VOLCANIC RIFTED MARGINS - 2. PRIORITY TRANSECT (SITE VM4 1. PRIORITY)



Conjugate Volcanic Rifted Margin Drilling Transect Sites

East Greenland/Vøring

Site (proposal)	Priority	Water Depth	Sediment thickness	Basement thickness	Total Depth	Est. Drill Time† (days)
G1 (328)	4th	3250	880	1120	2000	46
V6 (358)	3rd	3370	600	100	700	9
V5 (358)	4th	3180	470	400	870	17
V4 (358)	1st	1405	560	700	1260	18
V3 (358)	5th	1370	470	500	970	15
ODP 642	2nd	1289	300	1500	1800	27[1]

Total Drilling Days: *East Greenland = 46*
Vøring = 86

Southeast Greenland/Hatton

SG1 (310)	1st	500	500	700-800+100 pre-rift	1300-1400	17
SG3 (310)	4th	2100	1100	700-800	1800-1900	26
SG2 (310)	2nd	2100	1100	700-800	1800-1900	26
SG4 (310)	3rd	2100	1400	200	1600	20
DSDP 554		2574	126.6	82.4	209	
DSDP 553		2329	499.35	183+	682.5	
DSDP 552		2301	282.7	31.3	314	
DSDP 555		1659	927.32	37+	964	

Total Drilling Days: *Southeast Greenland = 89*
Hatton = 0

†without logging and transit
[1]deepening of site

NEWFOUNDLAND BASIN - IBERIA A.P. TRANSECT

- MORE MATURE, BETTER CHARACTERIZED
- FUNDAMENTAL QUESTIONS ABOUT THIN CRUST, MANTLE EXPOSURE

GOAL: SYSTEMATIC SAMPLING OF BASEMENT, SYN-RIFT, BREAKUP UNCONFORMITY, POST-RIFT SECTIONS ON TWO HALVES OF A THIN-CRUST, NON-VOLCANIC CONJUGATE PAIR.

QUESTIONS OF SYMMETRY:

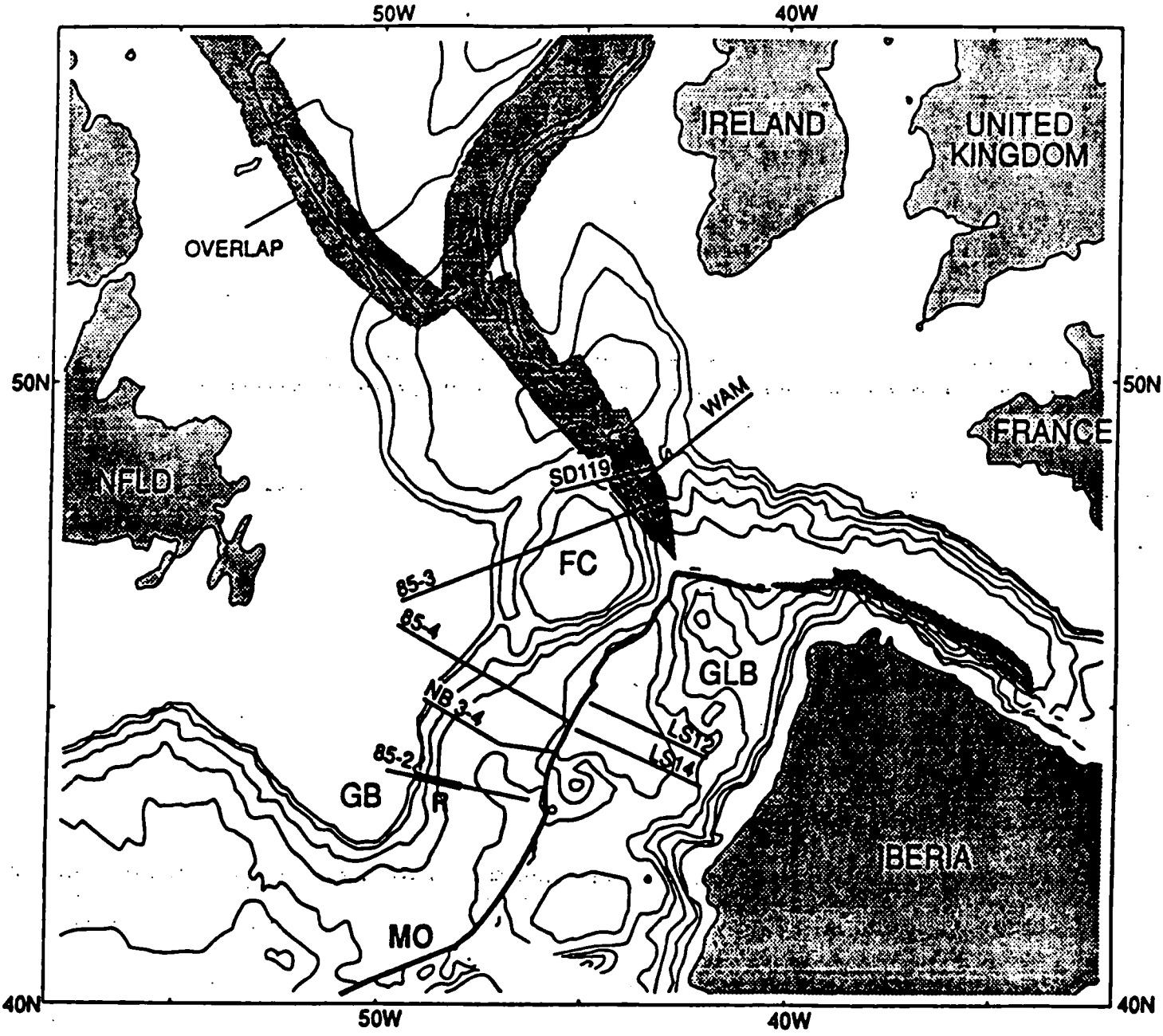
REGIONAL SCALE – ASYMMETRIC
BASIN SCALE – GROSSLY SYMMETRIC
SUBBASIN SCALE – ASYMMETRIC
(BREAKUP UNCONF., MANTLE EXPOSURE)

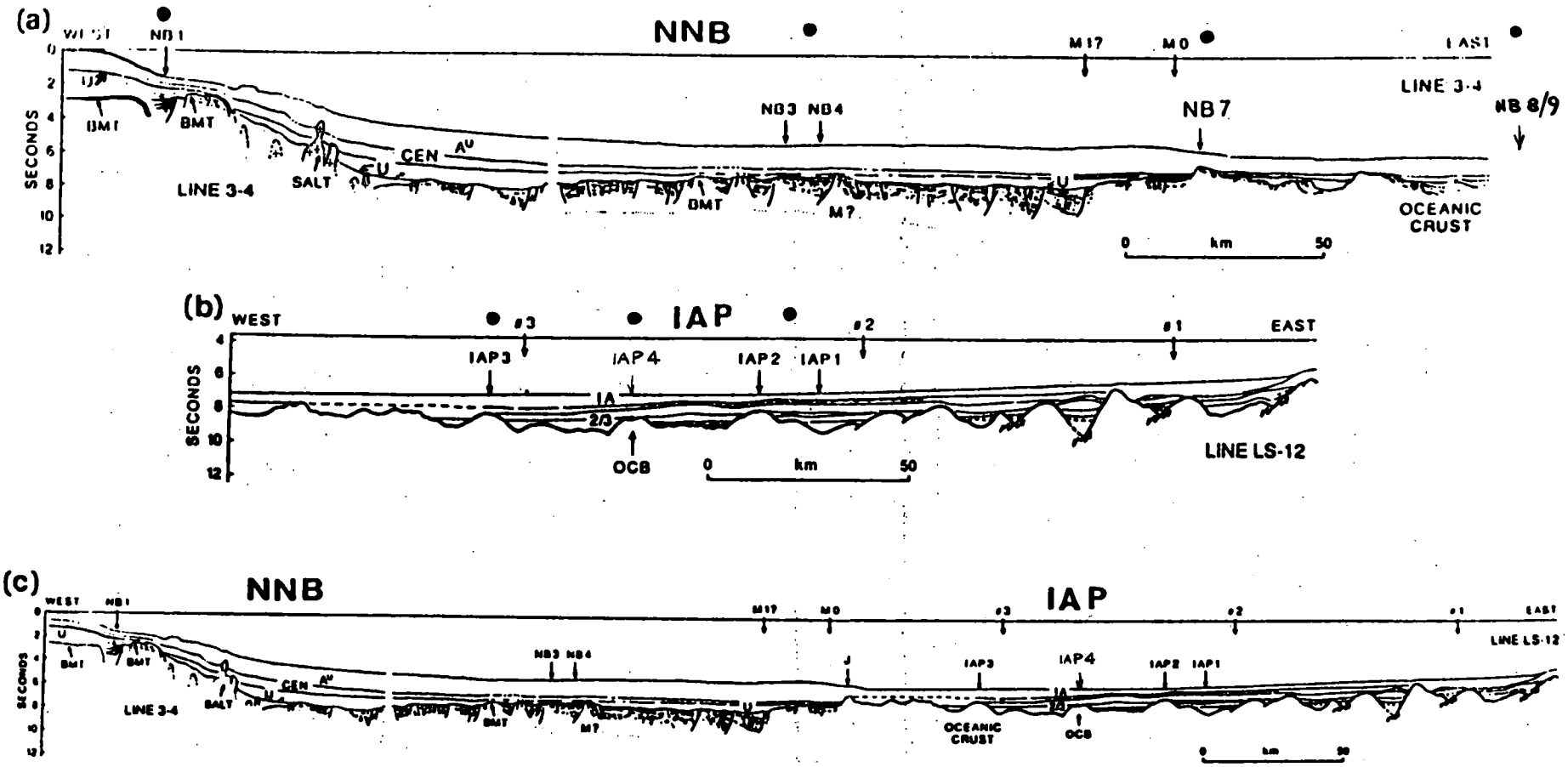
SAMPLING:

- NEWFOUNDLAND BASIN
  - SLOPE (R-JR + JR-K RIFT PHASES)
  - BASIN (THIN CONT. CRUST + BREAKUP UNC.)
  - J-ANOMALY RIDGE (OPTIONAL)
  - OCEAN CRUST - ROTATED BLOCK FAULTS
- IBERIA ABYSSAL PLAIN
  - BASIN (THIN CONT. CRUST)
  - OCB (? PERIDOTITE RIDGE)
  - NORMAL OCEAN CRUST

EXPECTED PRINCIPAL RESULTS:

- BREAKUP UNCONFORMITY - AGE/NATURE
- NATURE/ORIGIN OF THIN CRUST
- UPLIFT/SUBSIDENCE HISTORY
- NATURE OF BASEMENT RIDGE AT OCB
- SYNCHRONY/SYMMETRY OF EVENTS & BASIN DEVEL.
- TRANSITION TO NORMAL S.F.S. OCEAN CRUST


50W
40W
IRELAND
UNITED KINGDOM
OVERLAP
50N
50N
WAM
FRANCE
NFLD
SD119
FC
85-3
85-4
GLB
NB 3-4
LS12
LS14
85-2
GB
R
IBERIA
MO
40N
50W
40W
40N


(a)
NNB
WEST
NB1
M17
M0
EAST
LINE 3-4
NB 8/9
NB3 NB4
NB7
SECONDS
BMT
CEN
SALT
LINE 3-4
M?
OCEANIC CRUST
0 km 50
(b)
WEST
IAP
#3
#2
#1
EAST
IAP3
IAP4
IAP2
IAP1
IA
2A
OCB
LINE LS-12
(c)
NNB
IAP
LINE 3-4
LINE LS-12
OCEANIC CRUST
OCB

NB - IAP TRANSECT

SITE	WATER DEPTH	SEDIMENT	BASEMENT	TOTAL	DRILLING TIME
NB 1	1200m	1650m	-	1650m	20 d.
NB 3/4	3950m	2100m	ca. 400m	2500m	45 d.
NB 8/9	4300m	1600m	150m	1750m	28 d.
IAP 1	5200m	ca. 1700m	ca. 150m	1850m	37 d.
IAP 3	5500m	1120m	>100m	>1220m	12 d.
IAP 4	5400m	560m	>100m	>660m	6 d.
					148 days minimum

SEA LEVEL WORKING GROUP

- **ISSUES**

  -Sea Level and Sedimentary Record
  -Keynote Presentations
  Science and Technology

- **EL PASO REPORT**

  -Criteria, Objectives, Time Intervals, & Strategy

- **SL-WG MISSION**

  -Formulate Strategy
  -Position Paper
  Criteria, Guidelines, etc.

- **PLANS**

  -Solicit Proposals (deadline: August)
  -Recommend High-potential Sites
  -Prioritize Sites
  -Next Meeting

SEA LEVEL & SEDIMENTARY RECORD

- **KEYNOTE PRESENTATION**
  - -Deep Sea
  - -Siliciclastic Margins
  - -Carbonate Margins
  - -Tectonic Considerations
  - -Measuring Magnitudes, Rate, etc.

- **TASK OF SORTING SEA LEVEL**
  - -Lack of Fixed Frame of Reference
  - -Other Mechanisms
  - -Lags, loading, compaction, etc
  - -Amplitudes, assumptions

- **SEQUENCE STRATIGRAPHIC FRAMEWORK**
  - -Fundamental Stratigraphic Unit
  - -Unconformity Bounded
  - -Relative Synchroneity of Boundaries vs Transgressive-Regressive Sequences
  - -Type 1 Record Base-Level Change
  - -Identify Seismically
  - -Variable Models to be Tested & Developed, i.e., Siliciclastics, Carbonates, Mixed

SEA LEVEL & SEDIMENTARY RECORD

- **PRACTICAL PROBLEMS**
  - Seismic Limitations
  - -Tie to Borehole and Seismic
  - -Core Sampling
  - -Bridges Land to Deep Sea

- **SEA LEVEL TEST: CRITERIA**
  - -Global Synchroneity
  - -Type 1 Sequence Boundaries

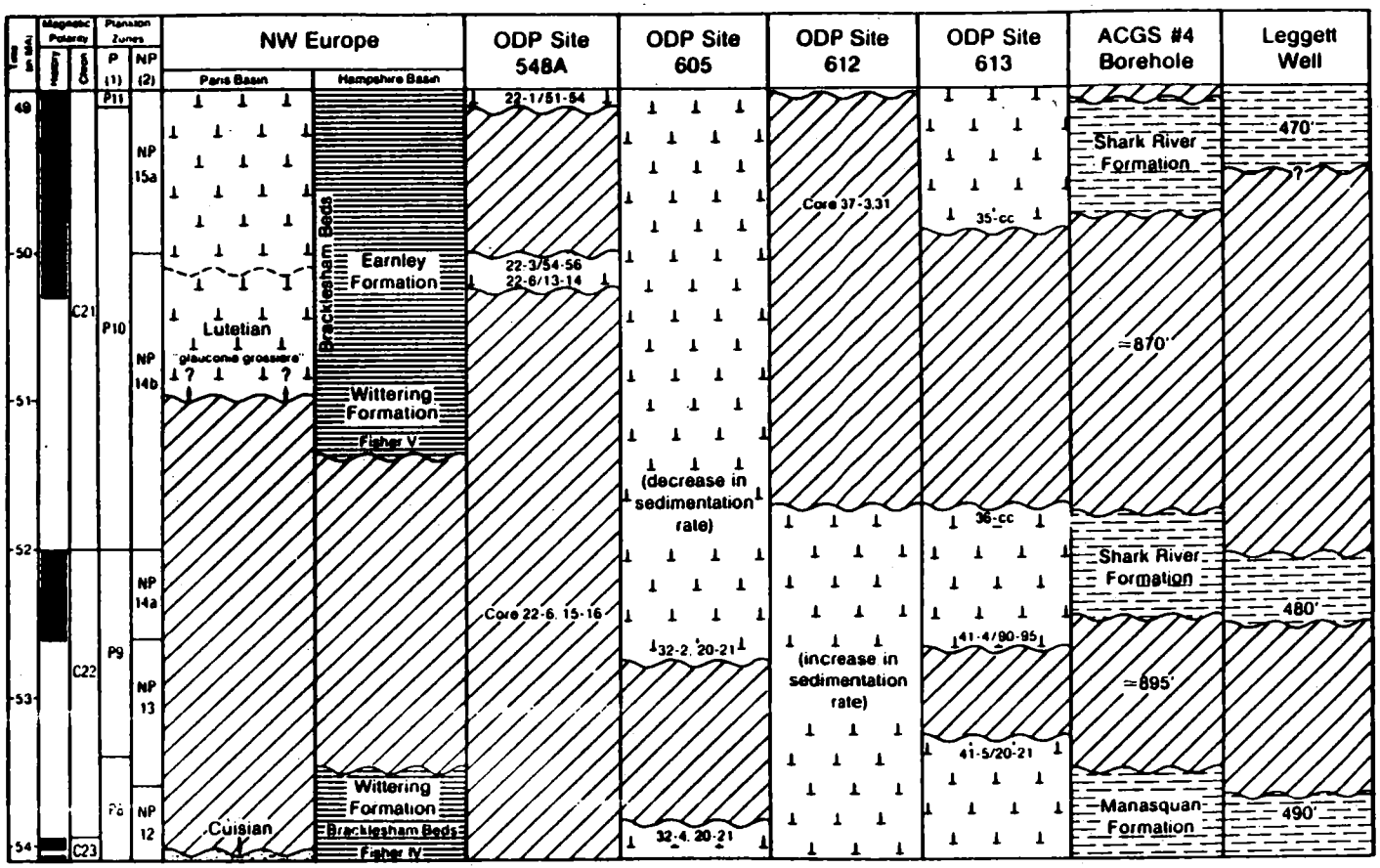


Figure 3. Interpretation of the stratigraphy of the upper lower to lower middle Eocene interval from selected sections with good biostratigraphic or magnetobiostratigraphic control from the North Atlantic basin (from Aubry, in press).

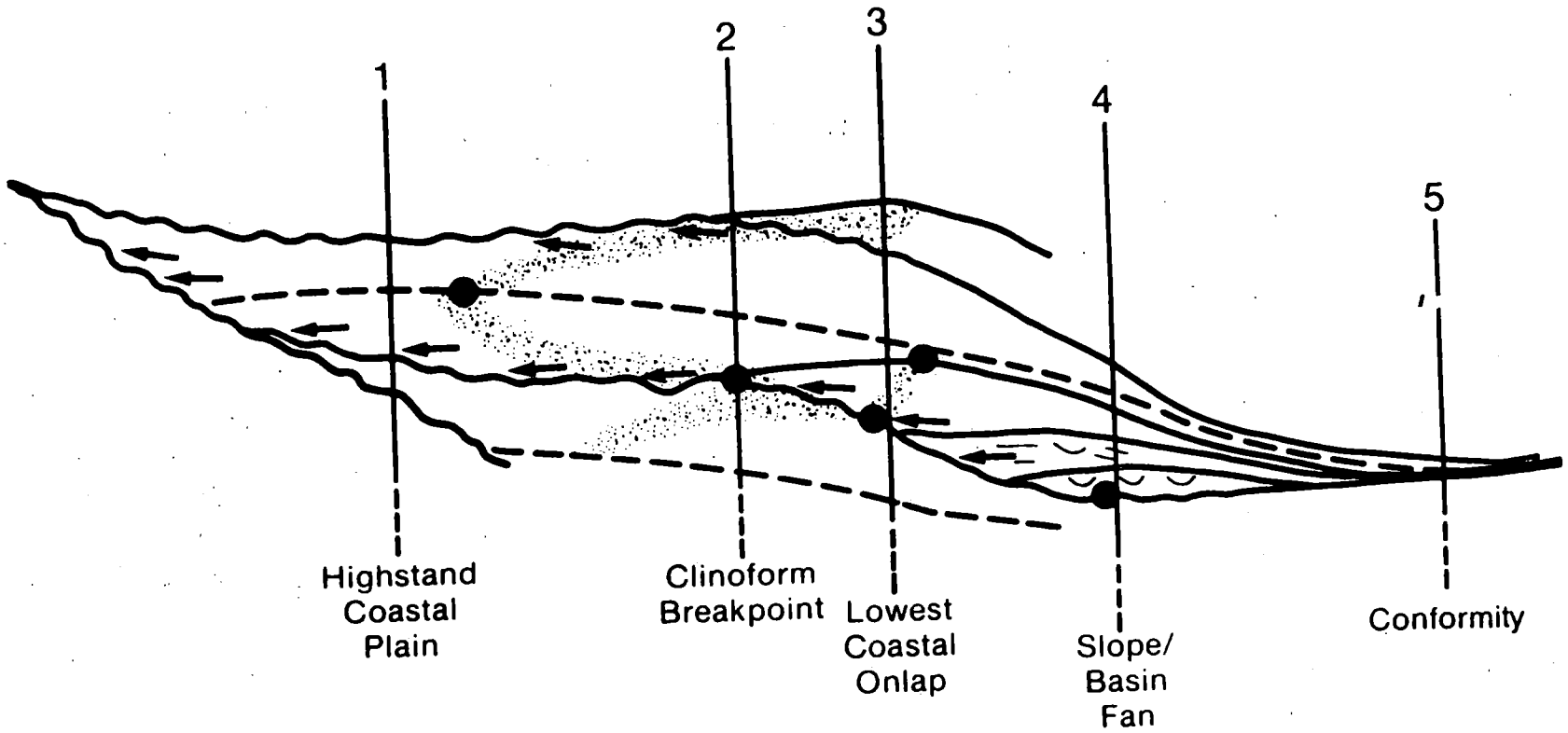


Figure 6. Schematic systems tract showing locations of recommended transect holes for siliciclastic margins.

EL PASO MEETING

- SITE CRITERIA
- PRINCIPAL OBJECTIVES
- TARGETED TIME INTERVALS
- DRILLING STRATEGY

EL PASO SITE CRITERIA

- WELL-KNOWN SUBSIDENCE HISTORY
- DENSE SEISMIC GRID
- OPEN-FILE WELL REPORTS
- NEARBY OUTCROPS
- TRANSECT POTENTIAL
- COMPLETE TARGET
- HIGH SEDIMENTATION RATES
- NUMEROUS DEPOSITIONAL SEQUENCES
- WELL-DEFINED SEQUENCE BOUNDARIES
- MODERATE BURIAL DEPTH
- HIGH CORRELATION POTENTIAL

PRINCIPAL OBJECTIVES

- DETERMINE THE SYNCHRONEITY OF GLOBALLY CORRELATIVE SEQUENCE BOUNDARIES
- DETERMINE WHETHER OR NOT GLOBALLY SYNCHRONOUS UNCONFORMITIES ARE, IN FACT, CAUSED BY SEA LEVEL CHANGES
- DETERMINE AMPLITUDES OF SEA LEVEL CHANGES WITH AN ACCURACY OF 1-5 METERS
- DETERMINE RATES OF CHANGES OF GLOBAL SEA LEVEL CHANGES
- ESTABLISH INTERRELATIONSHIPS BETWEEN SEA LEVEL CHANGE, OCEAN CIRCULATION, OCEAN CHEMISTRY, CLIMATE, AND OTHER REGIONAL ENVIRONMENTAL PHENOMENA

TARGETED TIME INTERVALS

- **NEOGENE "ICEHOUSE" EARTH**
  -Late Oligocene - Middle Miocene

- **CRETACEOUS 'HOTHOUSE" EARTH**
  -Aptian - Coniacian

- **PALEOGENE "DOUBTHOUSE" EARTH**
  -Latest Paleocene - Middle Eocene

DRILLING STRATEGY

- DRILL THREE OR FOUR MARGIN TRANSECTS IN EACH OF THE THREE TIME INTERVALS
- DRILL CRETACEOUS ATOLLS AND GUYOTS
- DRILL DEEP SEA SECTIONS BENEATH OCEANOGRAPHICALLY SENSITIVE SITES
- DISTRIBUTE SITES OF A WIDE GEOGRAPHIC RANGE
  - -North-South Atlantic and East-West Low-Latitude Megatransects
  - -Seven or More Legs Required

TECHNOLOGY ISSUES

- Core Recovery
  - -Example of poor recovery from Sites 815 and 816, Marion Plateau, Reefal Platform Carbonates

  - -Example of excellent core recovery from University of Miami, Bahamas Drilling Project

  - -Good core recovery is necessary to document lithology and facies characteristics of sea level change

- Supplemental Platform
  - -Example of Supplemental Platform used for Bahamas Drilling Project

  - -Need for Supplemental Platform to sample complete sea level record of shallow shelf and, potentially, on land

  - -*Joides Resolution* capabilities to sample outer shelf (~ 60 meters) to deep sea are critical for documentation of sea level record

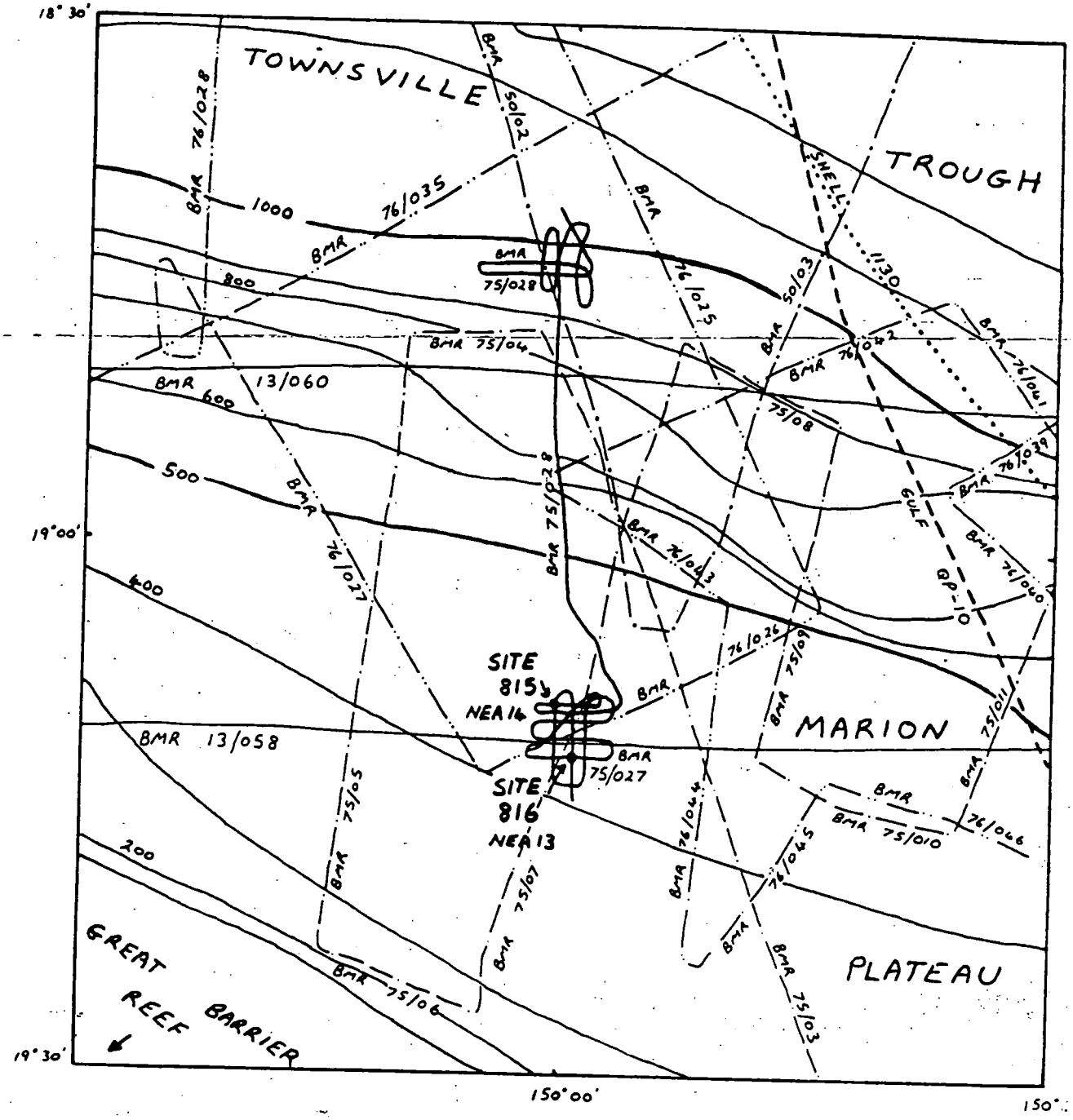


Figure 815-D-1. Track chart showing the distribution of regional seismic data in the area around Sites 815 and 816. Also shows simplified bathymetry in meters.

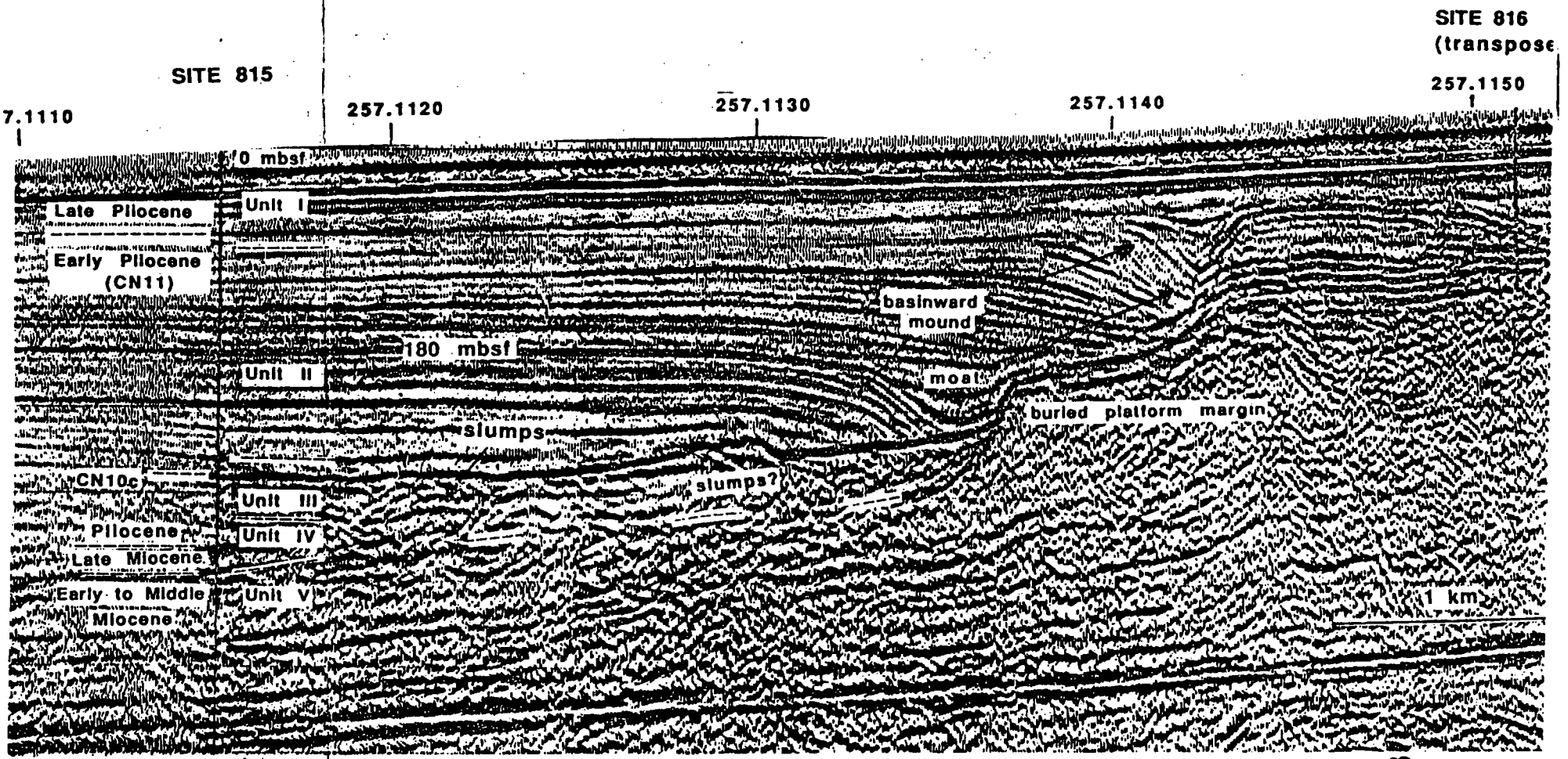


Figure 815-E-3

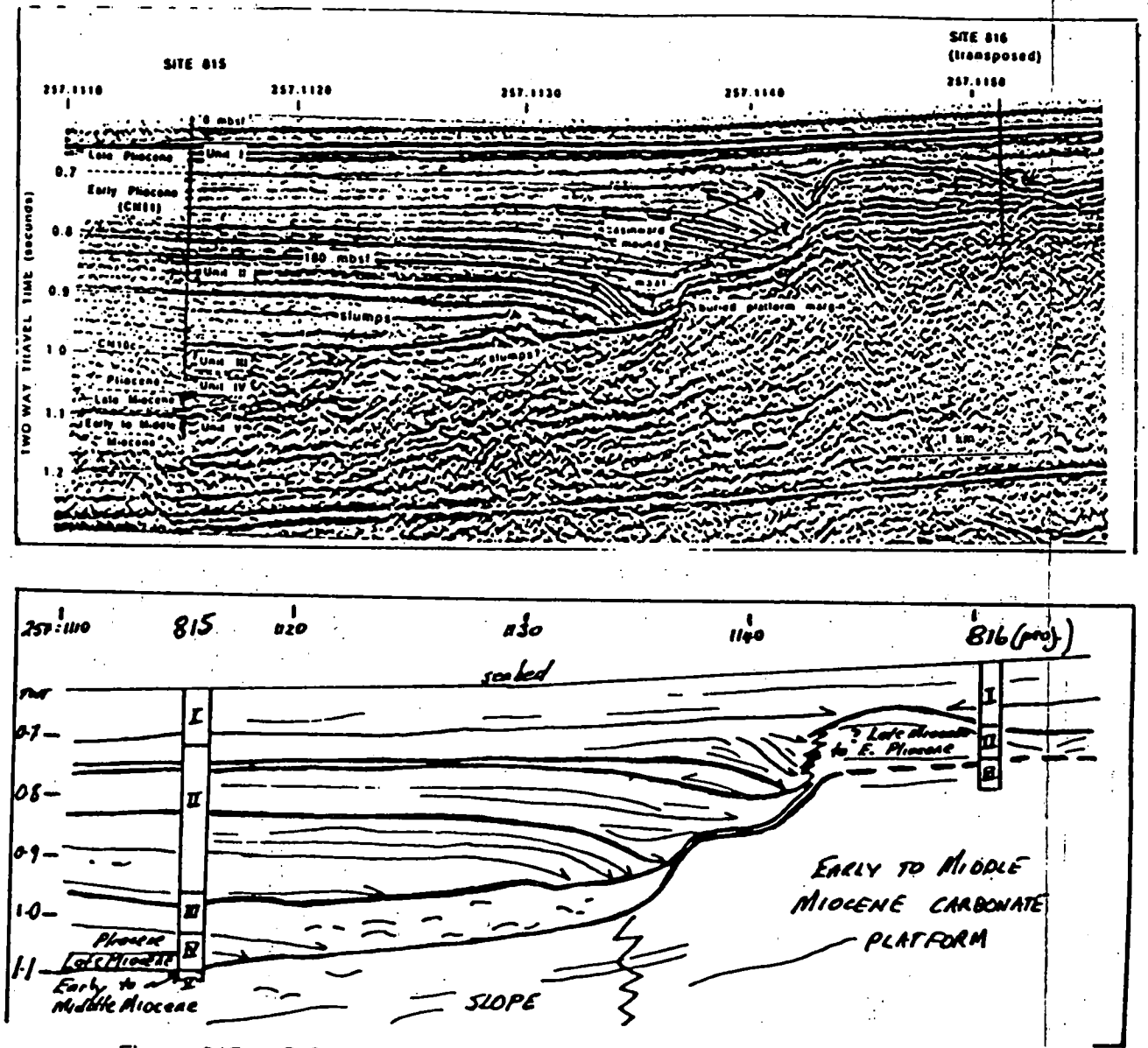
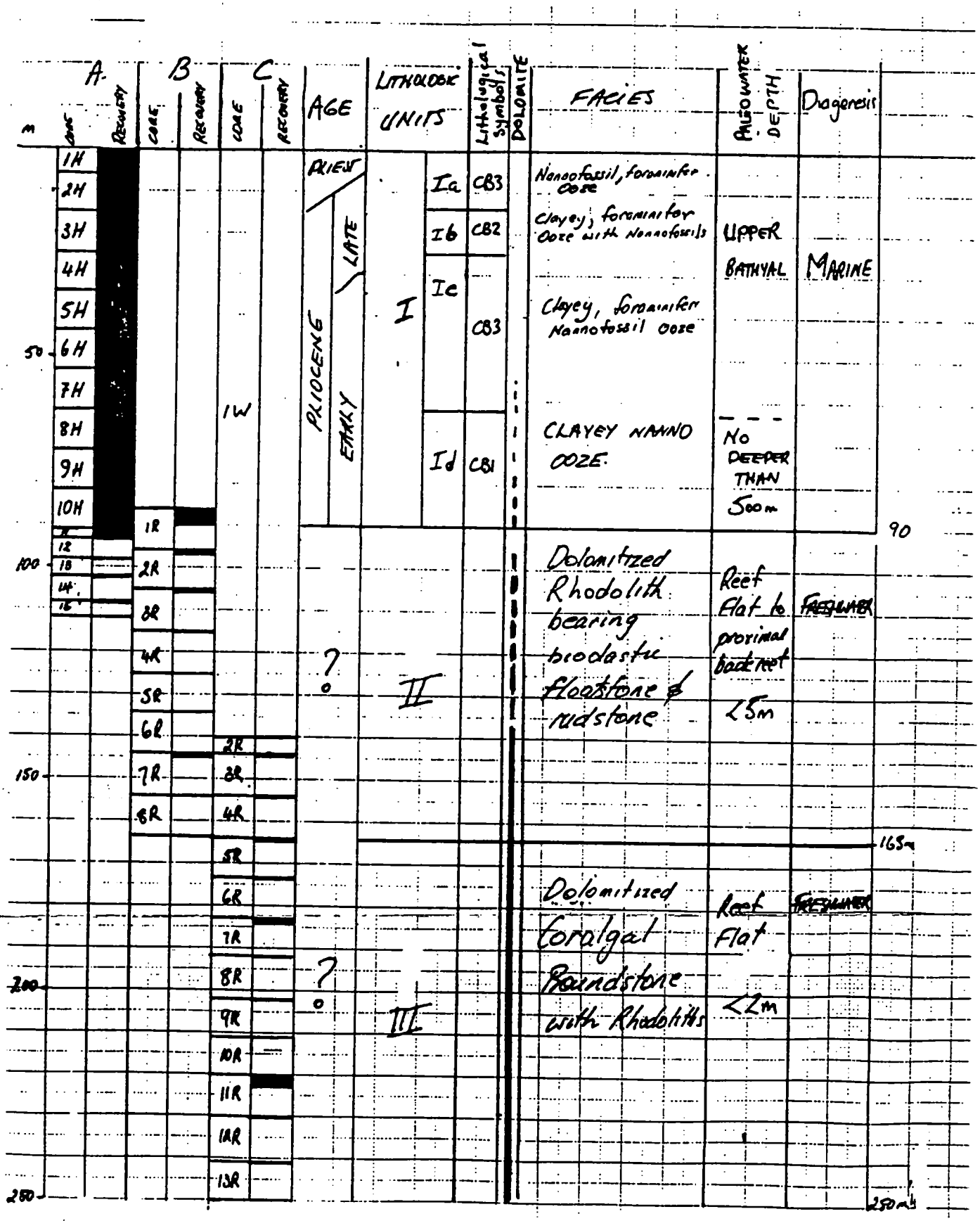
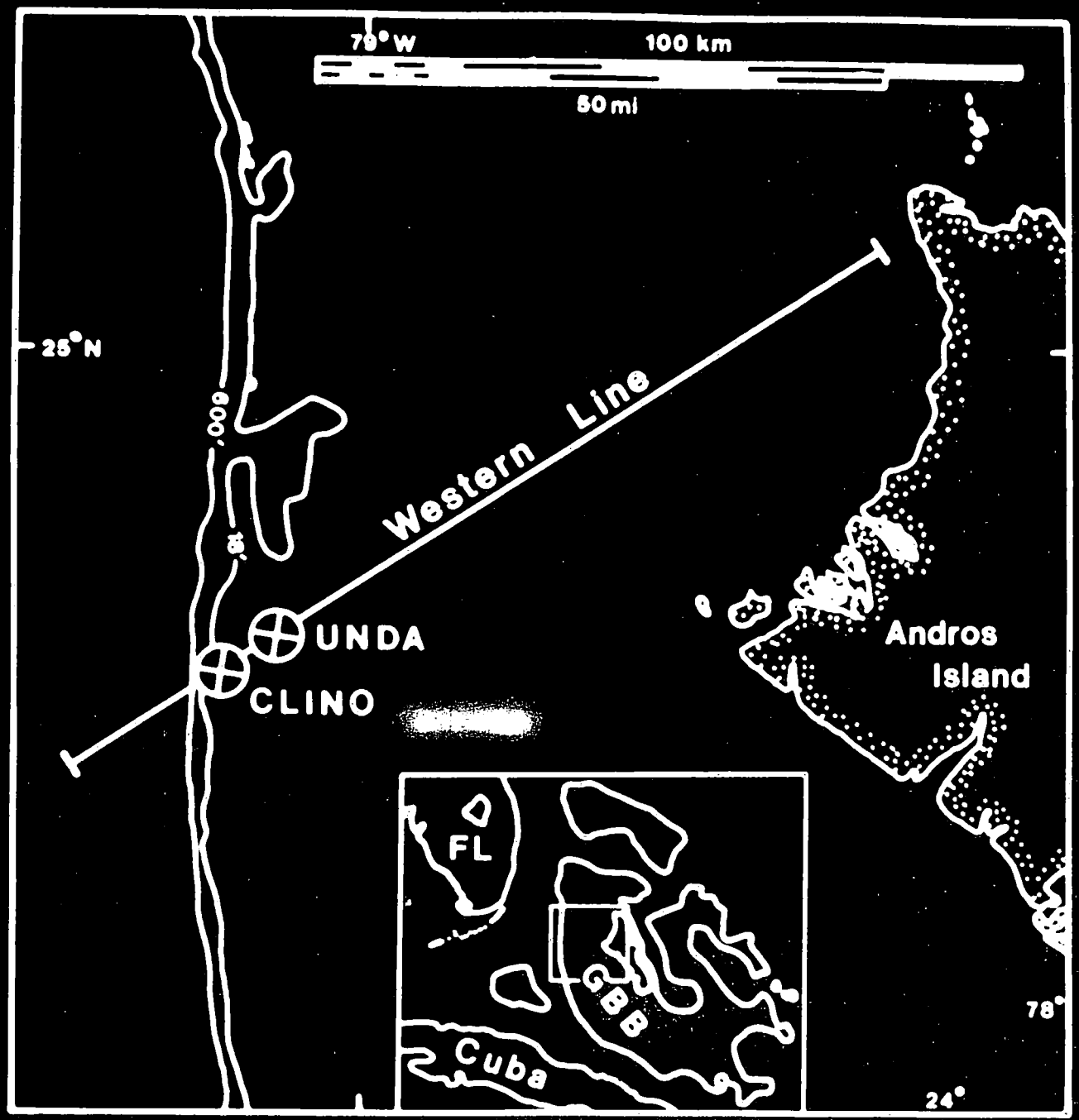
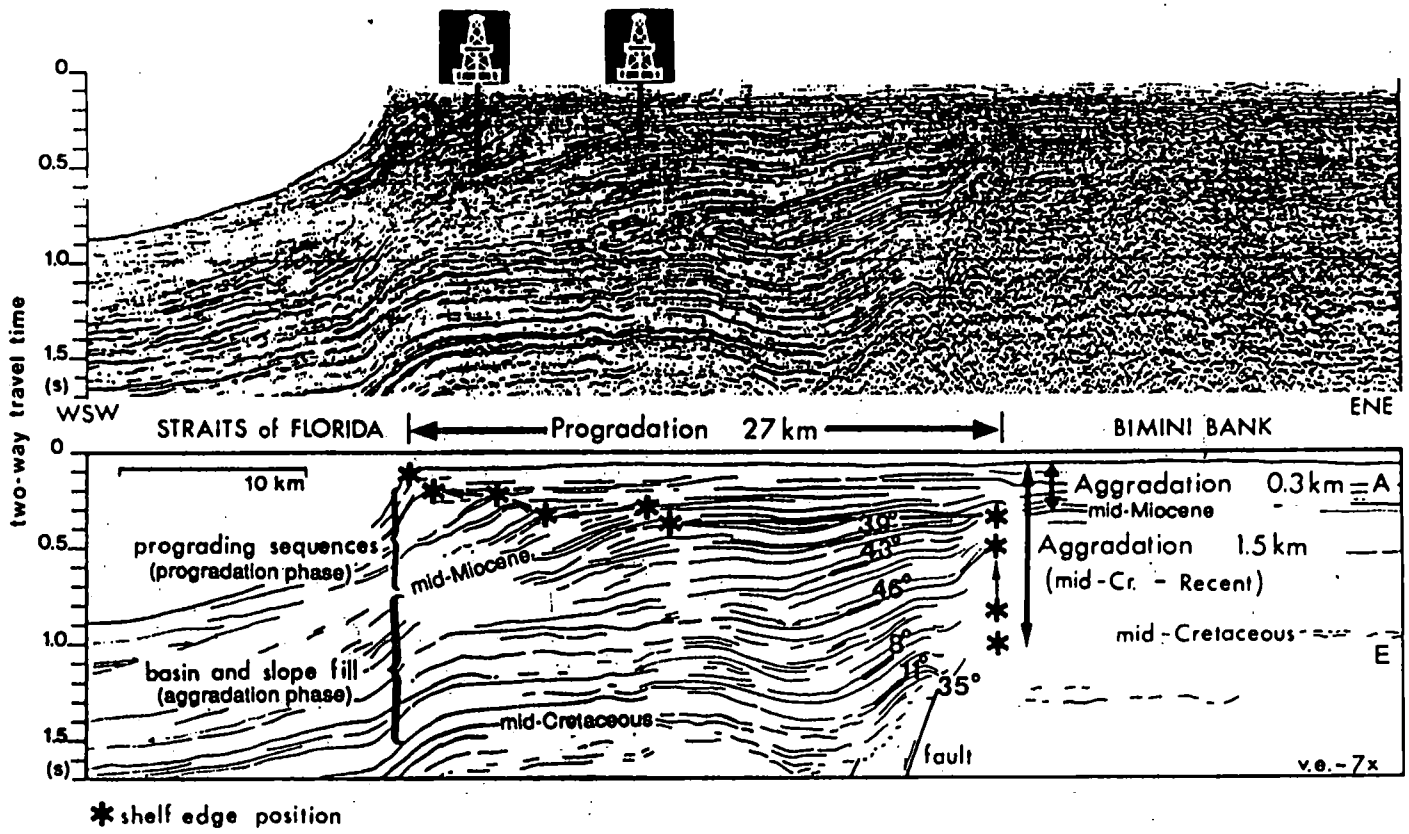


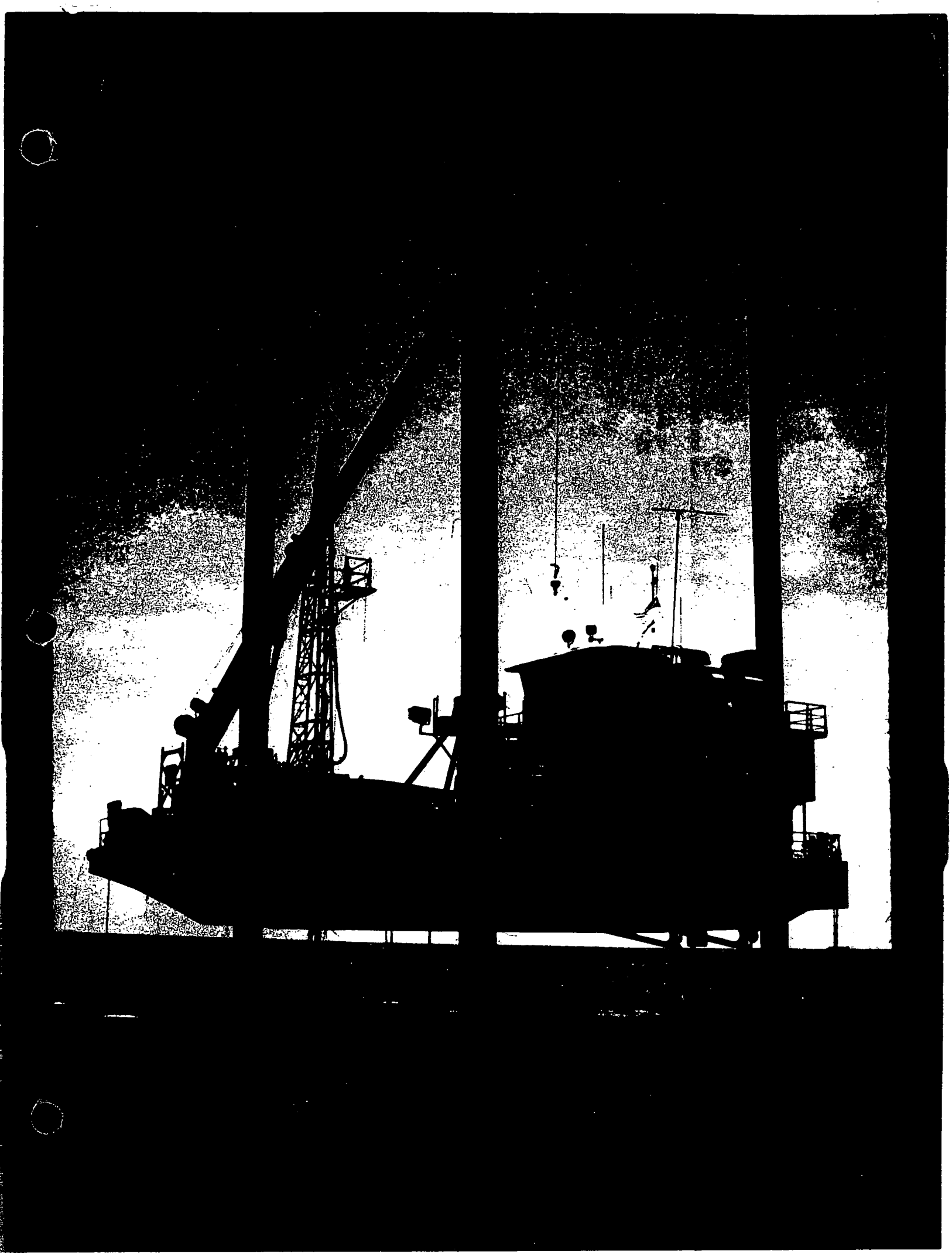
Figure 815 - Q-2. Interpreted seismic stratigraphy for Site 816 showing the seismic sequences.

Figure 816-E-1




79°W
100 km
50 mi
25°N
1000
Western Line
UNDA
CLINO
Andros
Island
FL
GBB
Cuba
78°
24°


0
0.5
1.0
1.5
(s)
two-way travel time
WSW
ENE
STRAITS of FLORIDA
Progradation 27 km
BIMINI BANK
10 km
prograding sequences
(progradation phase)
mid-Miocene
basin and slope fill
(aggradation phase)
mid-Cretaceous
fault
Aggradation 0.3 km = A
mid-Miocene
Aggradation 1.5 km
(mid-Cr. - Recent)
mid-Cretaceous
E
35°
v.e. - 7x
* shelf edge position



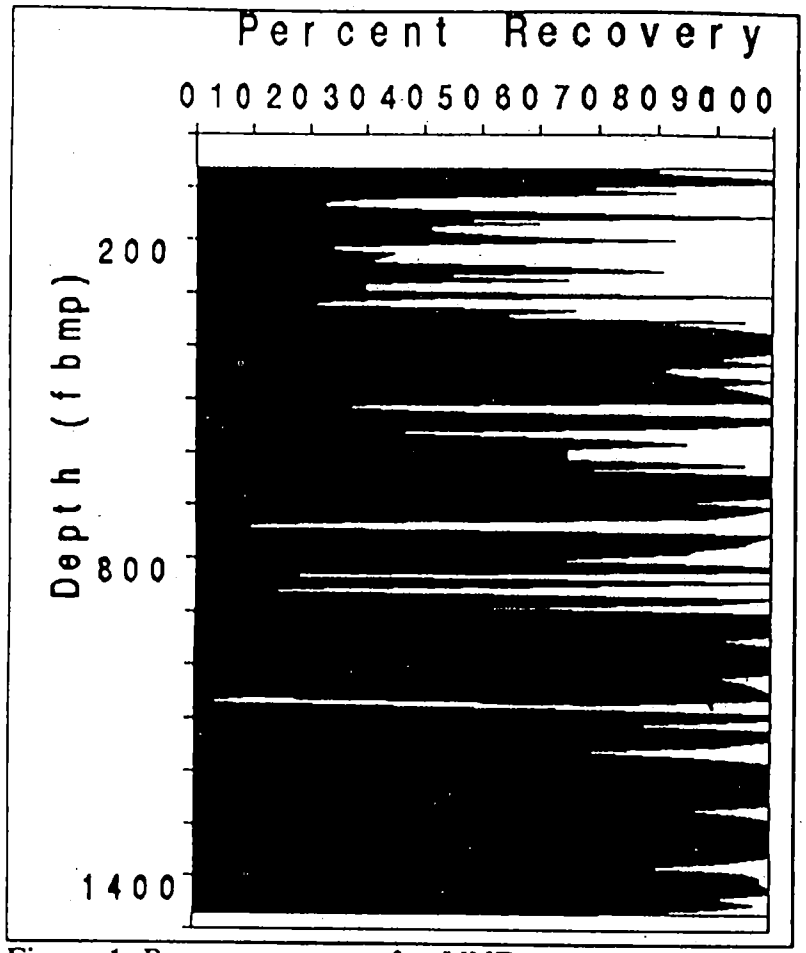


Figure 1: Percent recovery for UNDA 1-4.

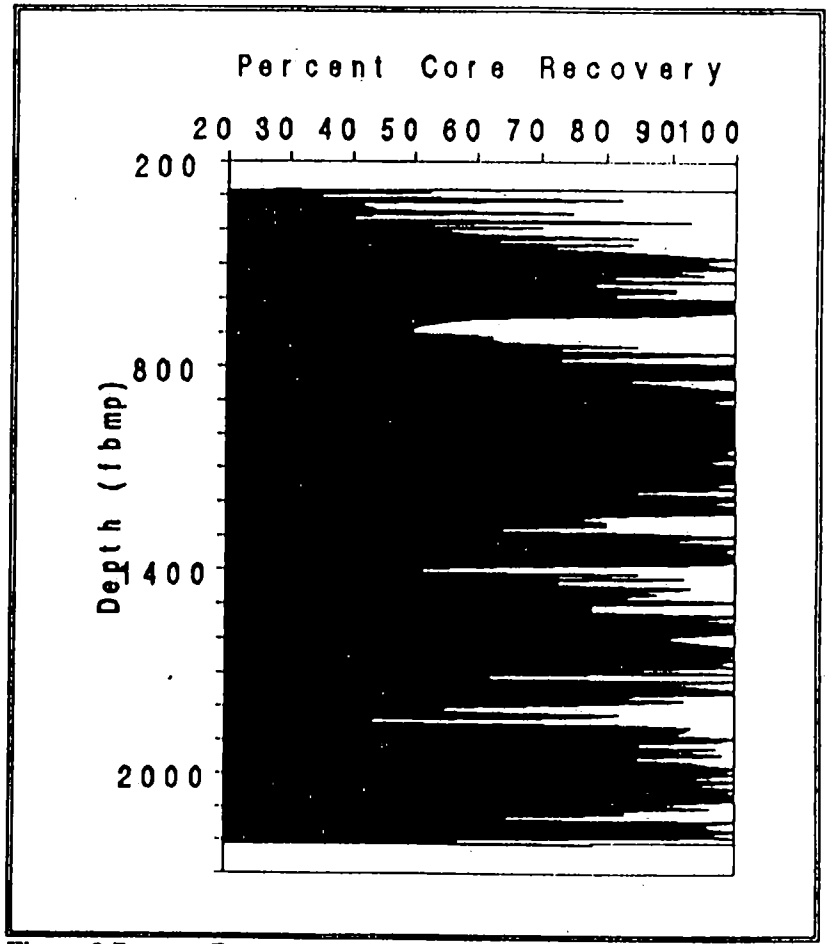
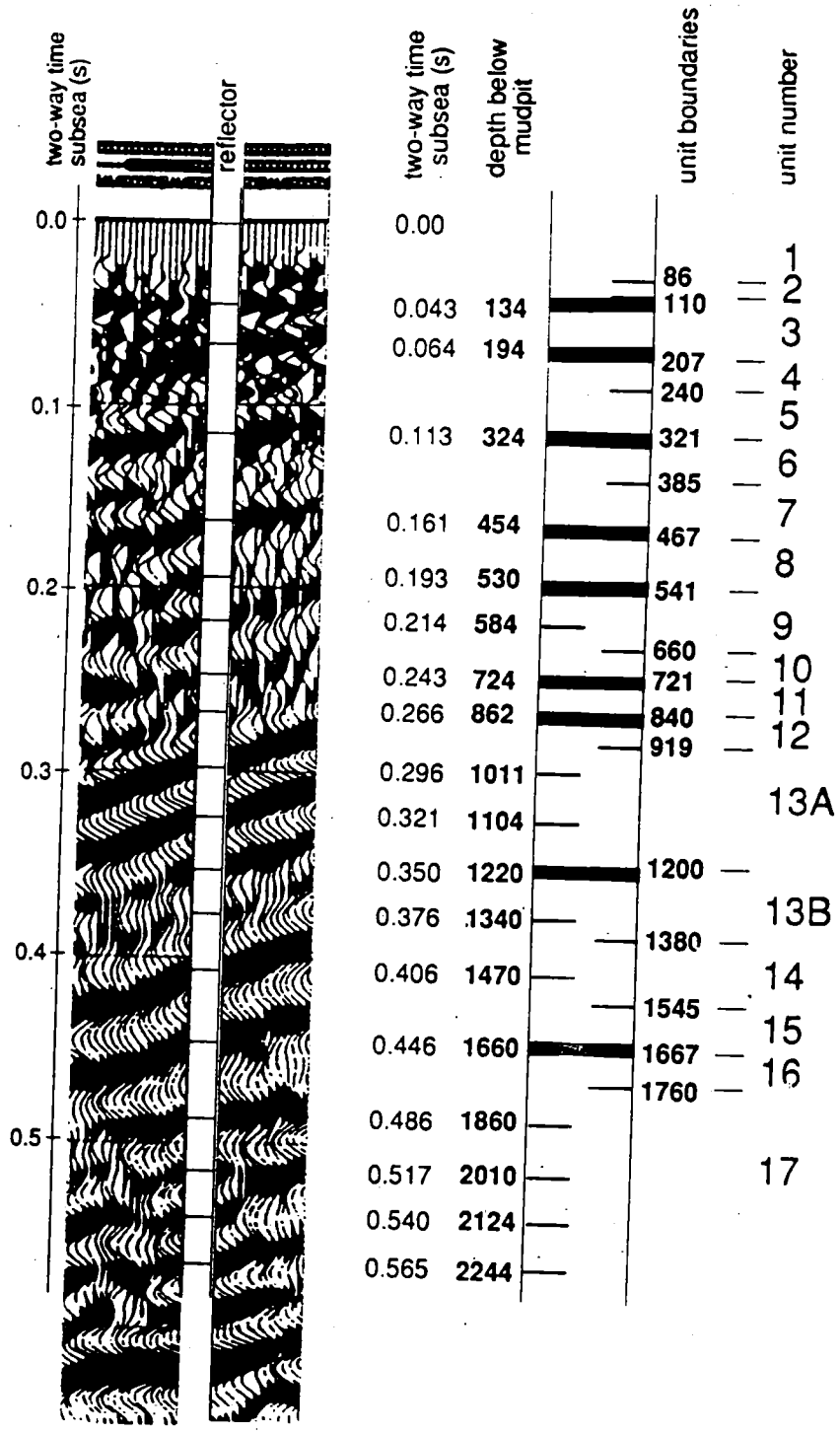
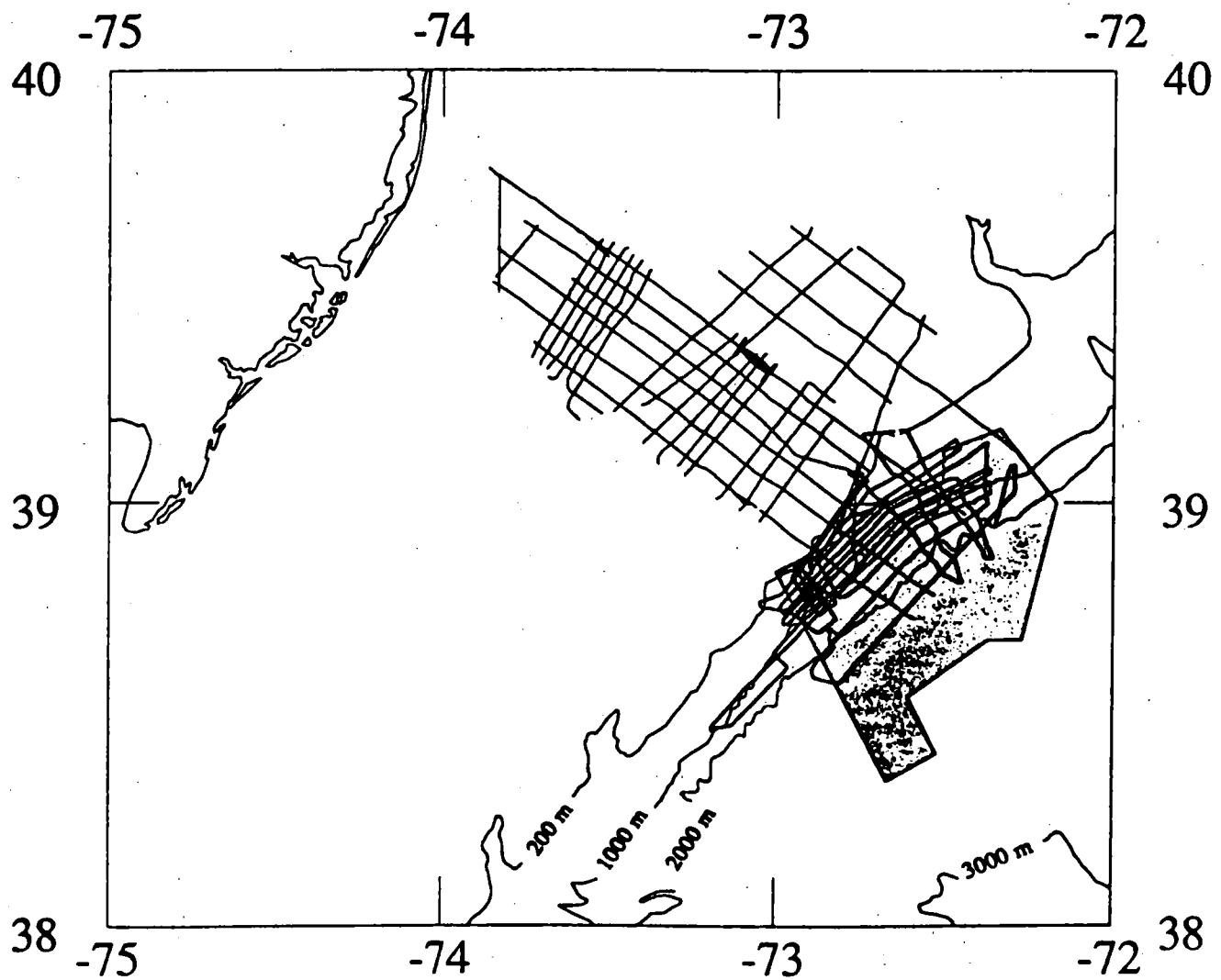


Figure 2:Percent Recovery as a function of depth for CLINO II.


two-way time subsea (s)
reflector
0.0
0.1
0.2
0.3
0.4
0.5
two-way time subsea (s)
depth below mudpit
unit boundaries
unit number
0.00
0.043 134
0.064 194
0.113 324
0.161 454
0.193 530
0.214 584
0.243 724
0.266 862
0.296 1011
0.321 1104
0.350 1220
0.376 1340
0.406 1470
0.446 1660
0.486 1860
0.517 2010
0.540 2124
0.565 2244
86
110
207
240
321
385
467
541
660
721
840
919
1200
1380
1545
1667
1760
1
2
3
4
5
6
7
8
9
10
11
12
13A
13B
14
15
16
17



— = data provided

Fig 1

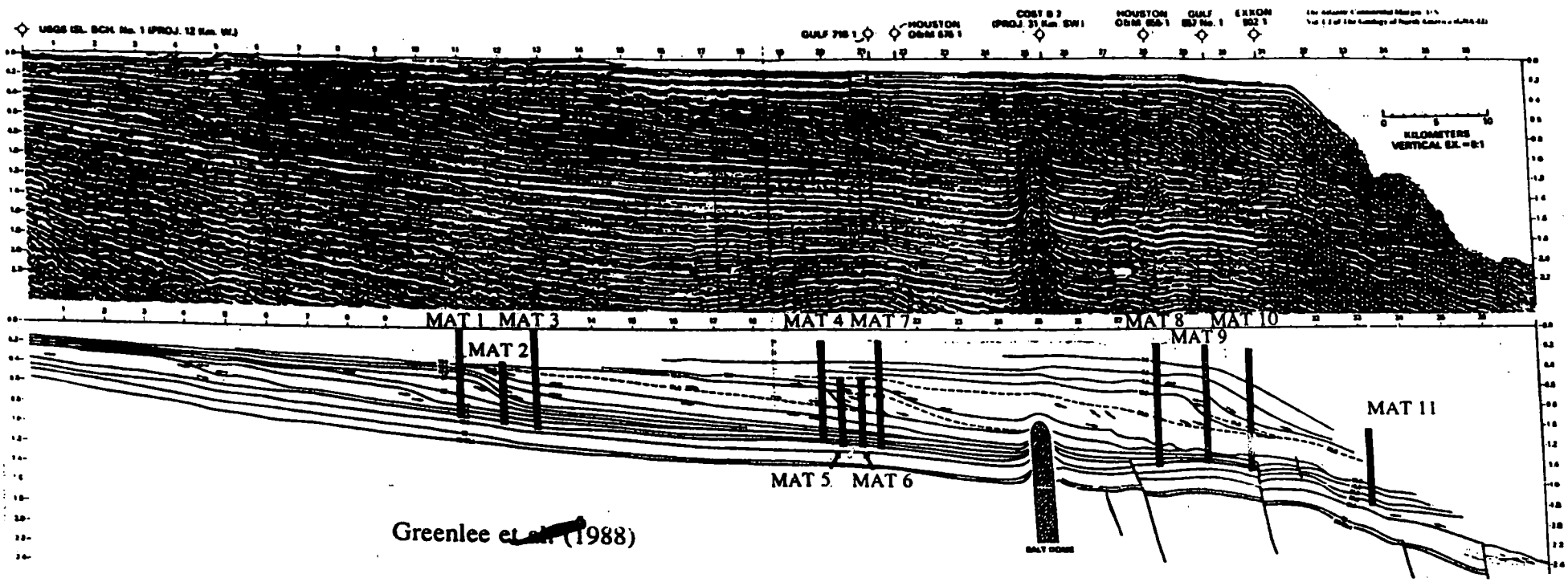


Figure 12. The Mid-Atlantic Transect: An Example.
Sites MAT1 to MAT12 are located on Greenlee *et al.*'s (1988) Line 6. See Table 2 for specifics on each site.

FIG. 0

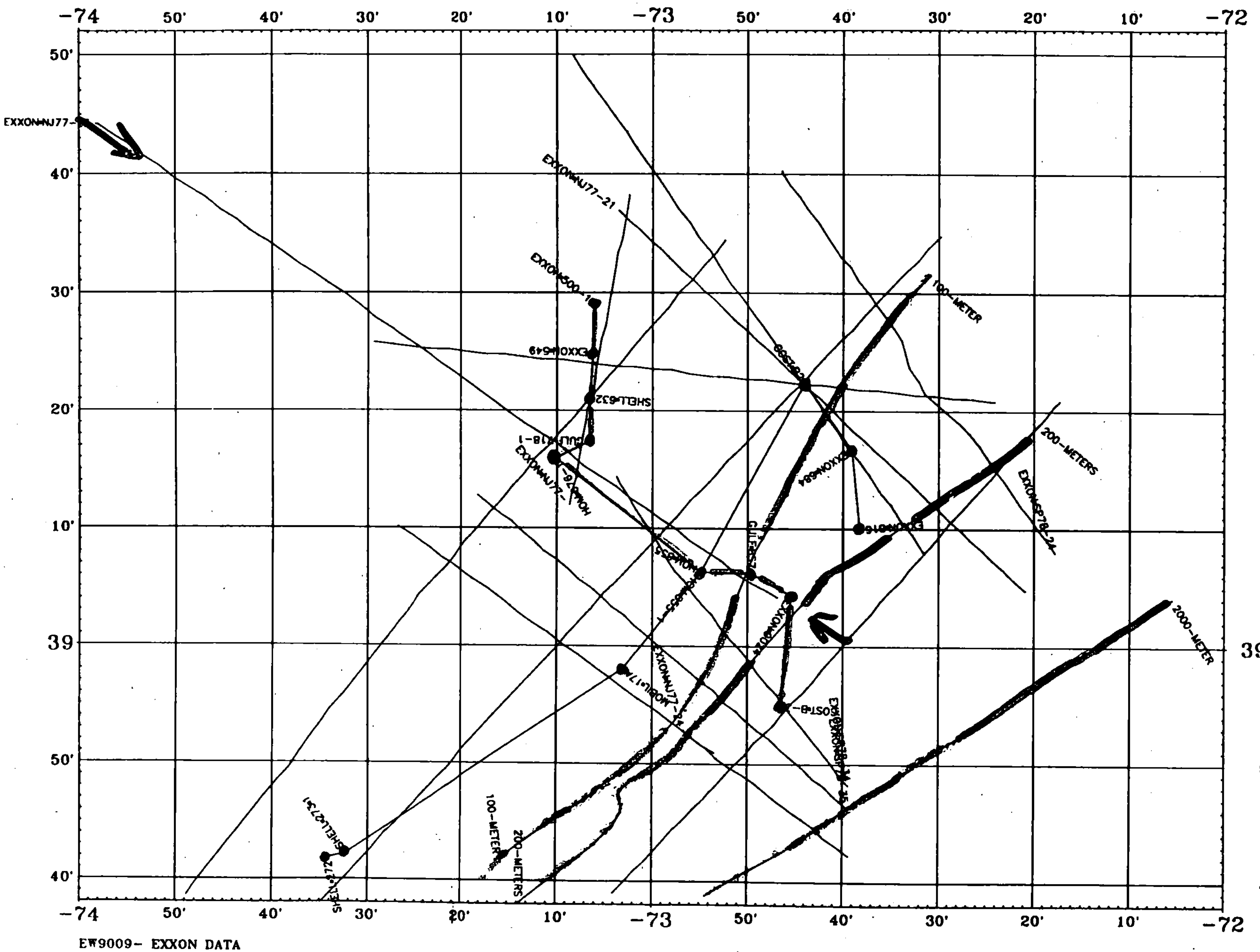

-74
50'
40'
30'
20'
10'
-73
-72
39
EXXON-NJ77-
EXXON-NJ77-21
EXXON-500-1
EXXON-649
SHELL-632
GULF-718-1
EXXON-NJ77-
EXXON-684
EXXON-816
GULF-857
MOBIL-17
EXXON-NJ77-24
OST-B
SHELL-273
SHELL-272
100-METER
200-METERS
2000-METER
EXXON-GP78-24
EW9009- EXXON DATA

FIG 0

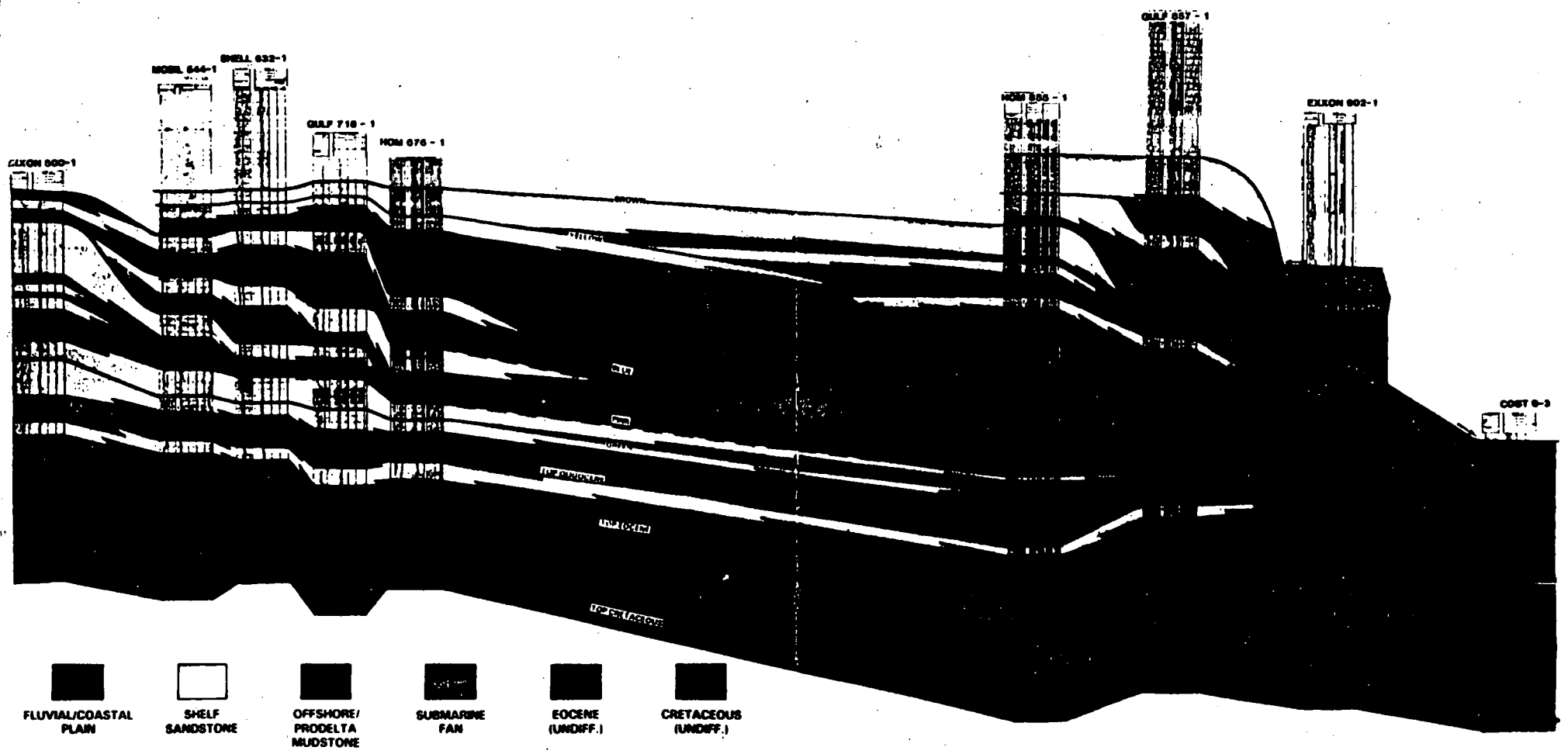

EXXON 900-1
MOBIL 644-1
SHELL 632-1
GULF 716 - 1
HOM 676 - 1
EXXON 902-1
COST G-3
FLUVIAL/COASTAL PLAIN
SHELF SANDSTONE
OFFSHORE/ PRODELTA MUDSTONE
SUBMARINE FAN
EOCENE (UNDIFF.)
CRETACEOUS (UNDIFF.)

FIG. 11

Miocene Biostratigraphy and Age Estimates

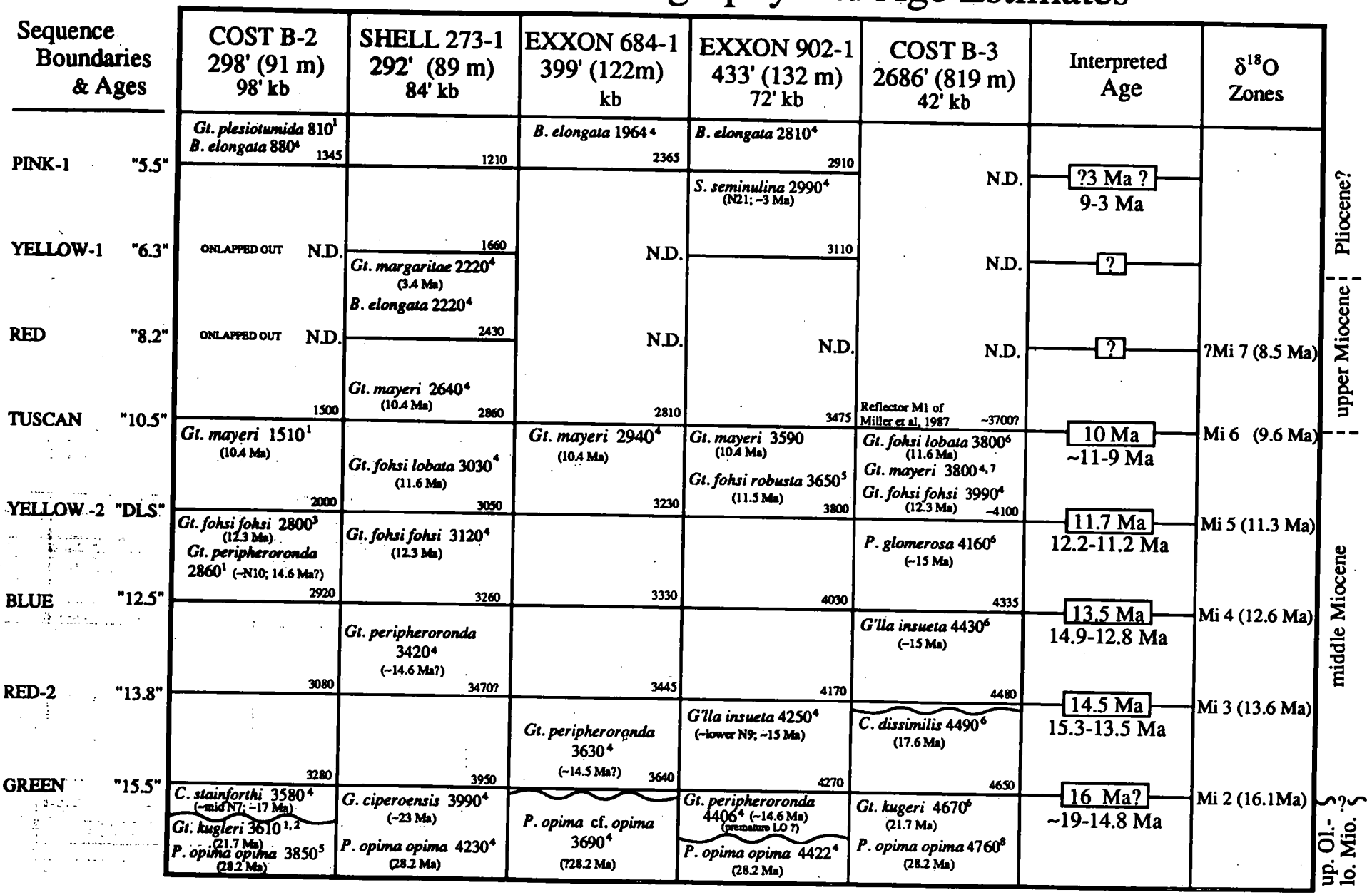


FIG. 8

SEA LEVEL WORKING GROUP MISSION

- TO FORMULATE A STRATEGY FOR ESTIMATING THE TIMING, RATE OF CHANGE, AND MAGNITUDE OF THE EUSTATIC SIGNAL AND THE RESPONSE OF THE SEDIMENTARY RECORD

- TO ENCOURAGE HIGH QUALITY DRILLING PROPOSALS ADDRESSING THE EUSTATIC ISSUES

- TO PROVIDE GUIDANCE FOR EVALUATING DRILLING PLANS BASED ON THIS STRATEGY

SL-WG TARGETS

	Siliclastic Margins	Carbonate Margins	Atolls	Deep Sea
Ice House				
Plio-Pleistocene	New Zealand ?S. China Sea	?Bahamas* ?Maldives	Mururoa*	Ont. J. CEARA Madeir
Oligo-Miocene	New Jersey New Zealand	?W. Florida ?Bahamas Marion Plateau		Ont. J.
Doubt House	?Ottway Basin		Harrie	
Green House			Marshalls Middle Pacific	

*Non-ODP Supplimental Drilling Ventures

Other Sedimentary Basins with potential

Alabama (Main Pass)	Olig-Miocene
Brazil Para-Maranhao	Doubt to Ice House
East Breaks (TX)	Plio-Pleistocene Ice House
Ceara Mundau	?Green-Ice House
Beaufort Sea	Ice House

SEA LEVEL WORKING GROUP

- MISSION DEFINED
  - -Draft by November

- SCIENTIFIC/TECHNOLOGIC GOALS
  - -Test Global Synchroneity
  - -Test Sequence Stratigraphic Models
  - -High Quality Data Sets
  - -Calibrate with Land Data
  - -Core Recovery
  - Supplemental Platform
  - -

- PROMOTE/IDENTIFY SITES
  - -Lack of Mature Proposals
  - -Solicit Proposals
  - -Identify Target Sites
  - -Prioritize Target Sites

THE ORIGIN OF CONTINENTS AND OCEANS

BY

ALFRED WEGENER

Translated from the Fourth Revised German Edition by

JOHN BIRAM

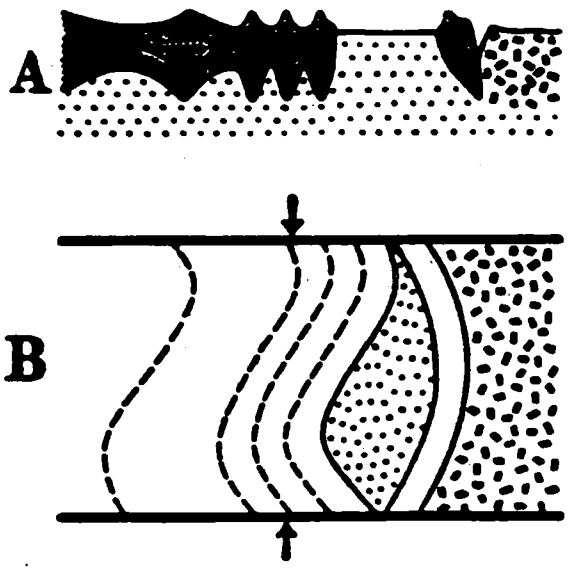


FIG. 52. Diagram of the origin of island arcs.

A: cross section; B: plan view. (The strongly cooled part of the sima is indicated by dashes.)

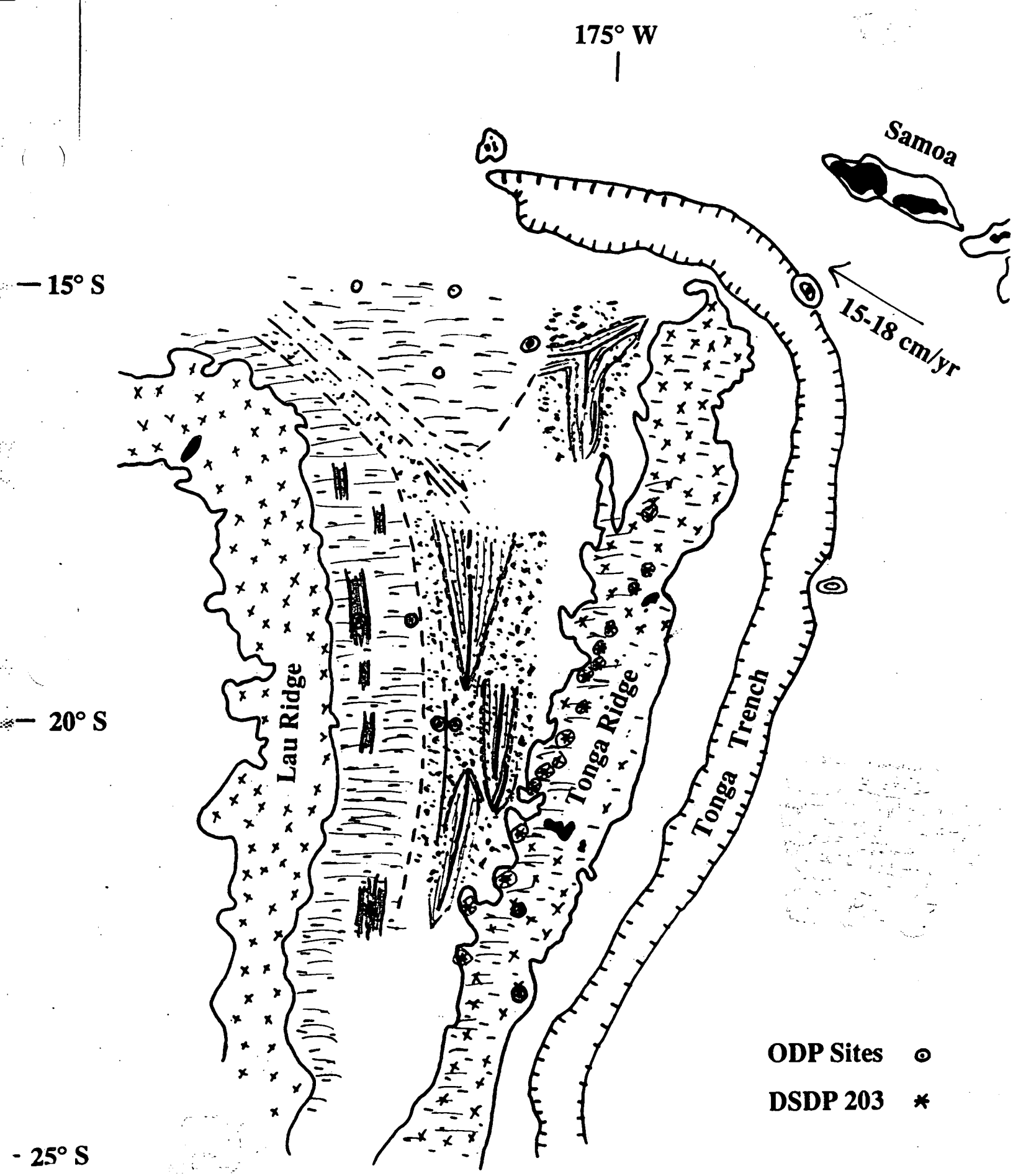
"According to our interpretation, the island arcs, and particularly the eastern Asiatic ones, are marginal chains which were detached from the continental masses when the latter drifted westwards and remained fast in the old sea floor, which was solidified to great depths. Between the arcs and the continental margin later, still-liquid areas of sea floor were exposed as windows."

LEG 135

LAU BASIN TRANSECT

THE PROBLEMS

1. Backarc Crust Nature & Age
2. Basin extension When? How?
3. Sub-basin filling - Provenance?
4. Arc - Backarc Magmatism
   Coeval? Episodic?
5. Forear Crust - Nature & Age
   arc? oceanic? forearc?
6. Uplift - Subsidence history
   Horizon A What is it?


175° W
Samoa
15° S
15-18 cm/yr
Lau Ridge
Tonga Ridge
Tonga Trench
20° S
ODP Sites
DSDP 203
25° S
LAU BASIN

TONGA RIDGE FOREARC SITES 840 - 841

1. Thin Carbonate cover < 100 m

2. Early Mioc. – Late Pliocene volcaniclastic Turbidites
   Lau Ridge source (?)
   upward Proximal → distal

3. "Diabase" sills in Late Mioc. turbidites (basaltic andesite)

4 Reticulate leached zones (fluid flow ?)

5 Early Oligo shallow water CO_3s w/ volcanic clasts

6. Late Eocene reefal ls.
   Discocycling

fault

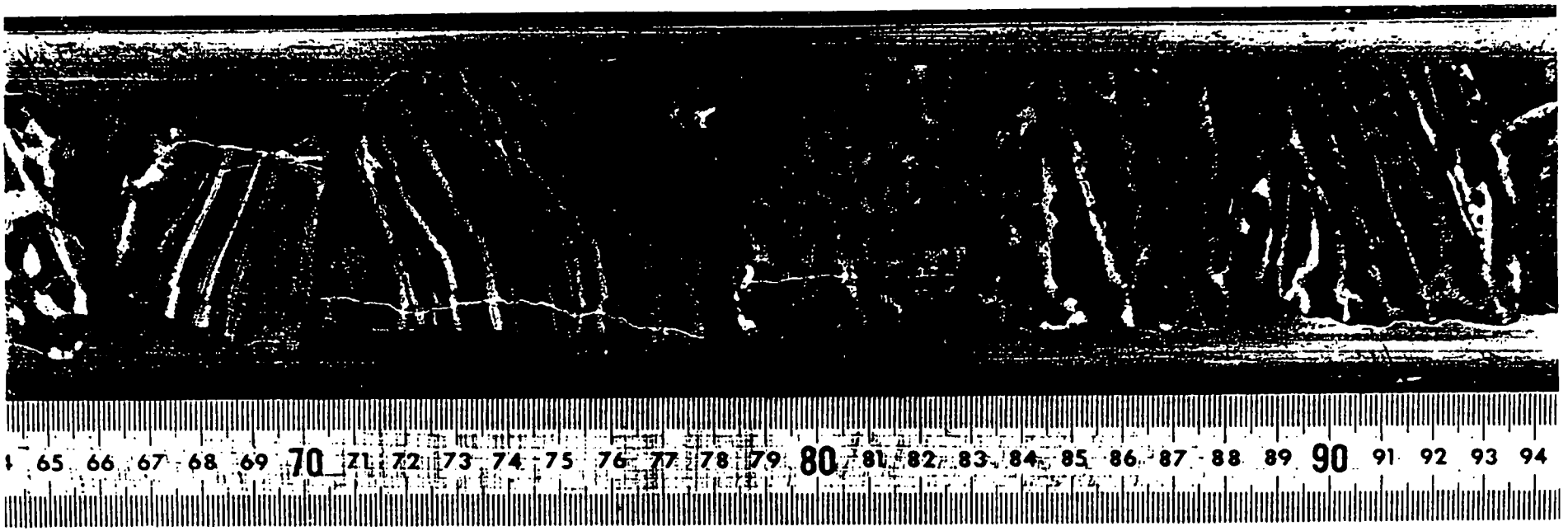
7. High Si: dacite ~78-80% SiO_2 1-1.5K

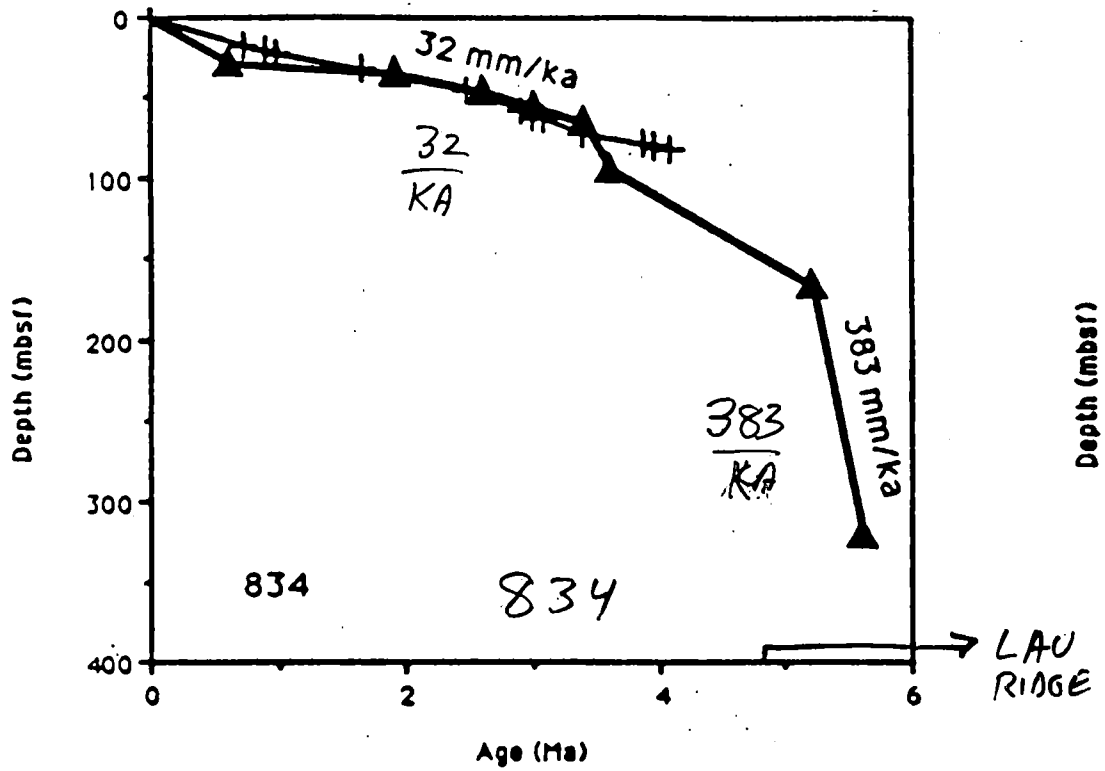
OCEAN DRILLING

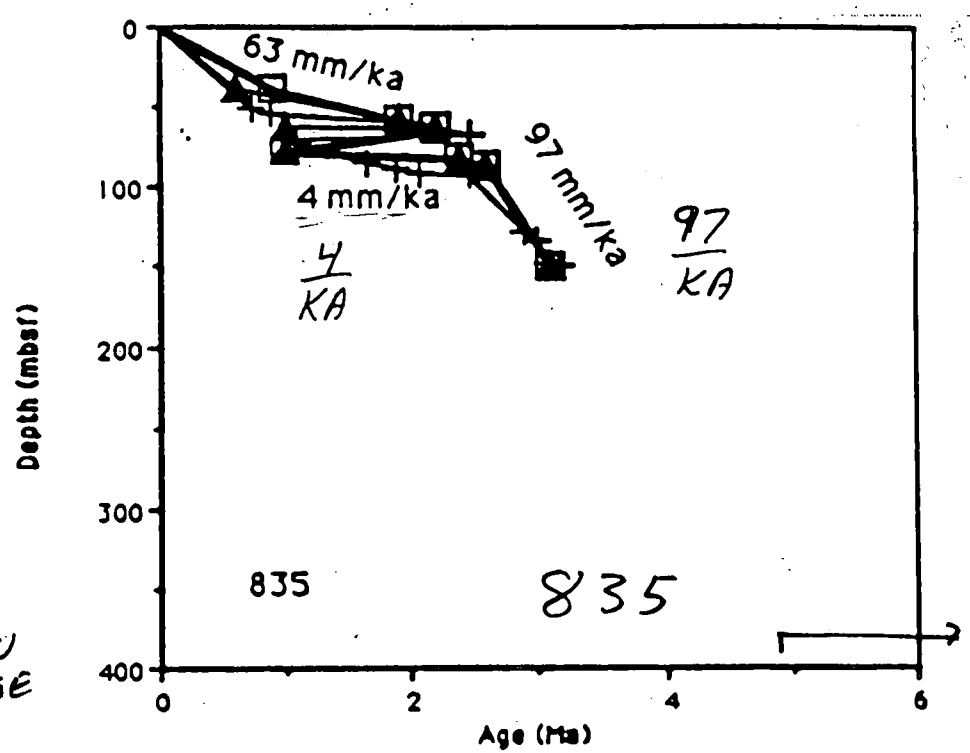
leg | hole | core | sect

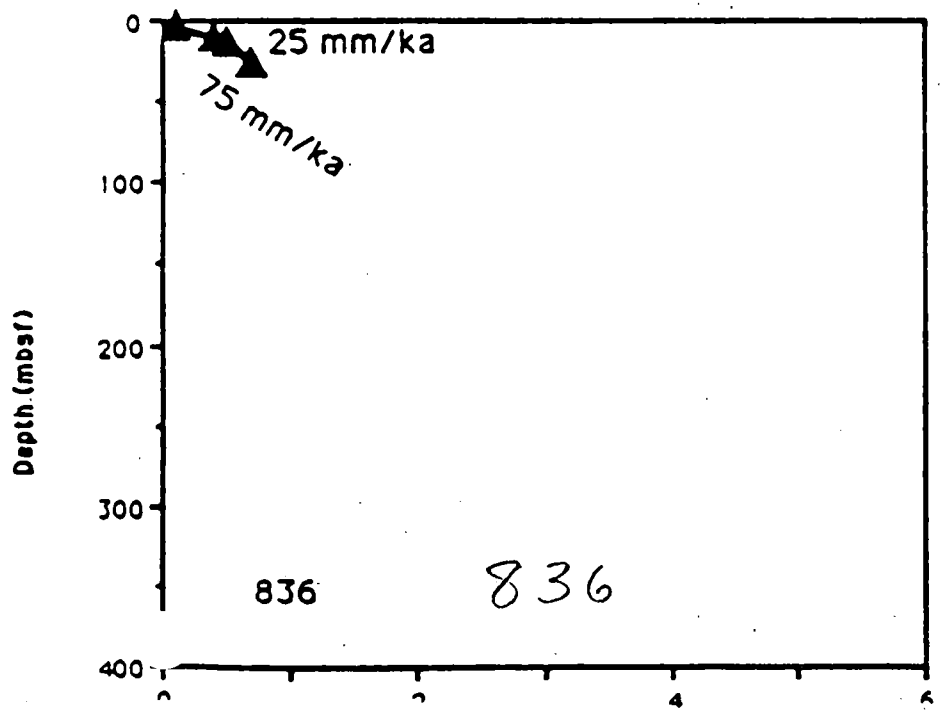
135 841B 33R-1

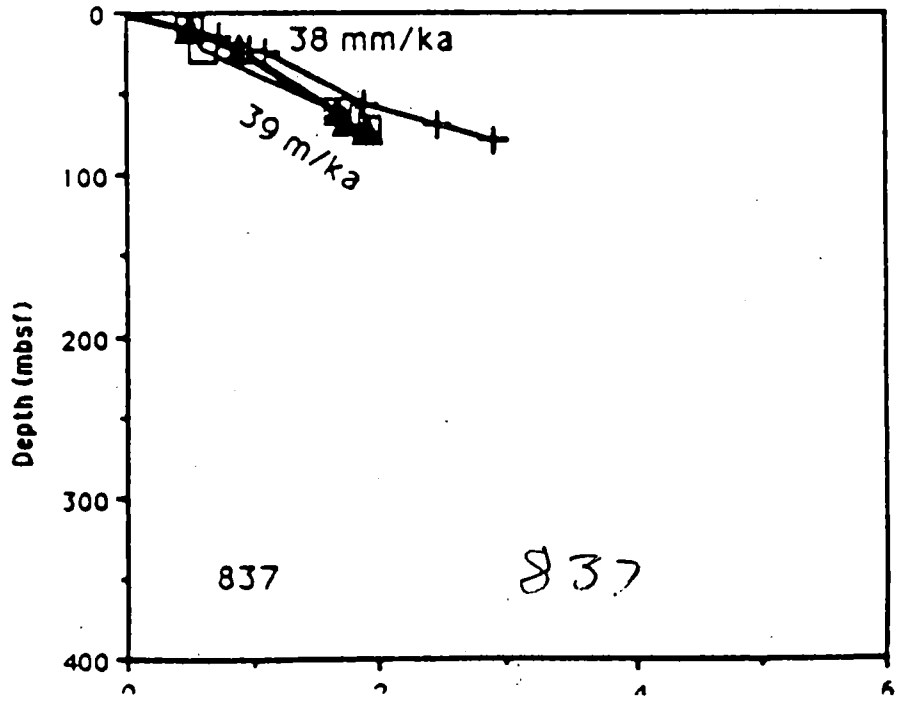
65-93

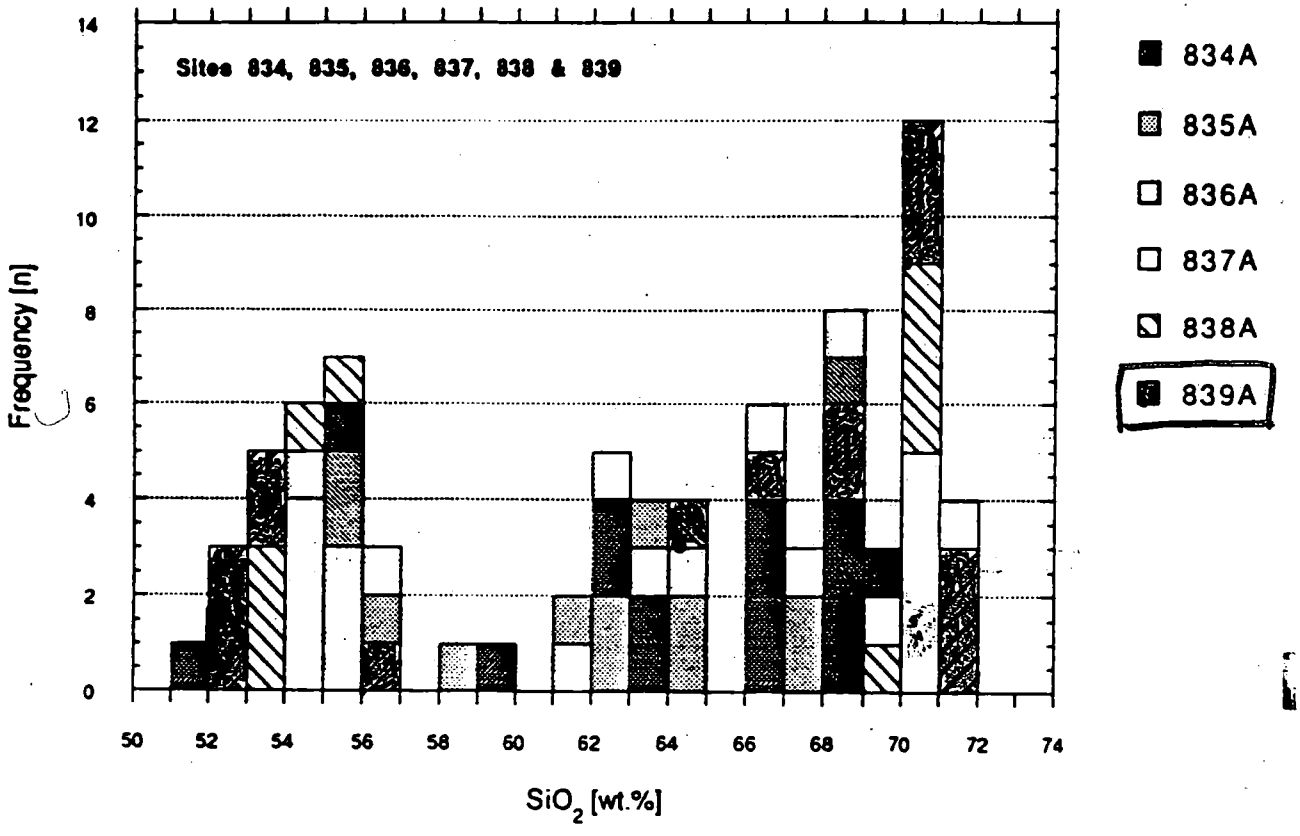



32 mm/ka
32
KA
383 mm/ka
383
KA
834
834
LAU
RIDGE
Depth (mbsf)
Age (Ma)
0
100
200
300
400
0
2
4
6


63 mm/ka
97 mm/ka
4 mm/ka
4
KA
97
KA
835
835
Depth (mbsf)
Age (Ma)
0
100
200
300
400
0
2
4
6


25 mm/ka
75 mm/ka
836
836
Depth (mbsf)
0
100
200
300
400


38 mm/ka
39 m/ka
837
837
Depth (mbsf)
0
100
200
300
400

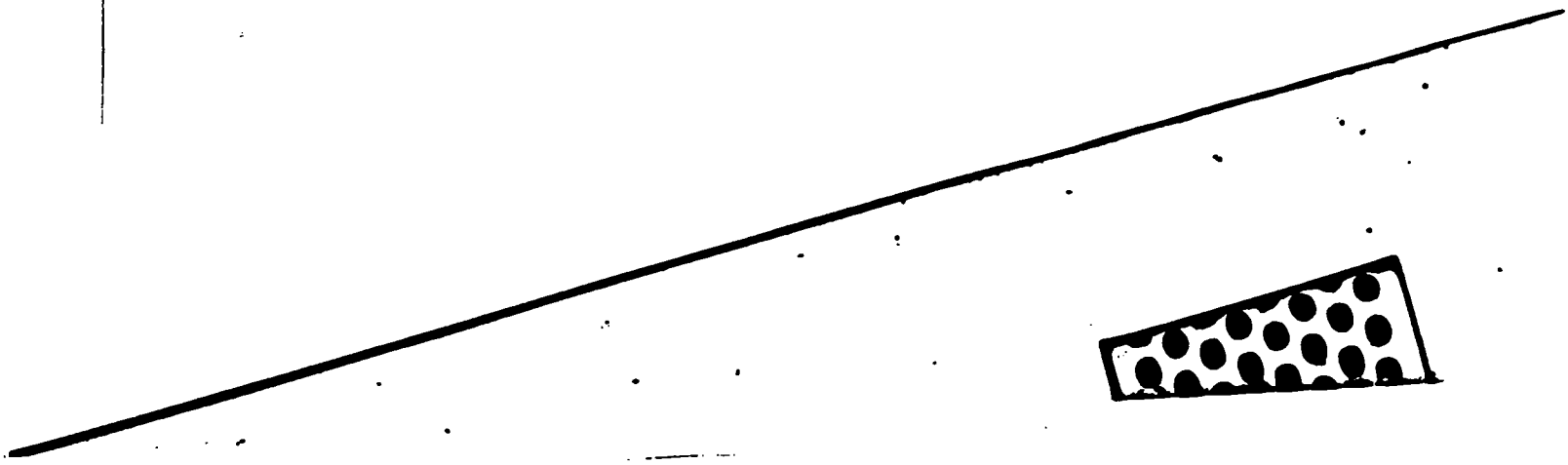


52-56% SiO_2

62-68% SiO_2

70-72% SiO_2

Figure Intro-4



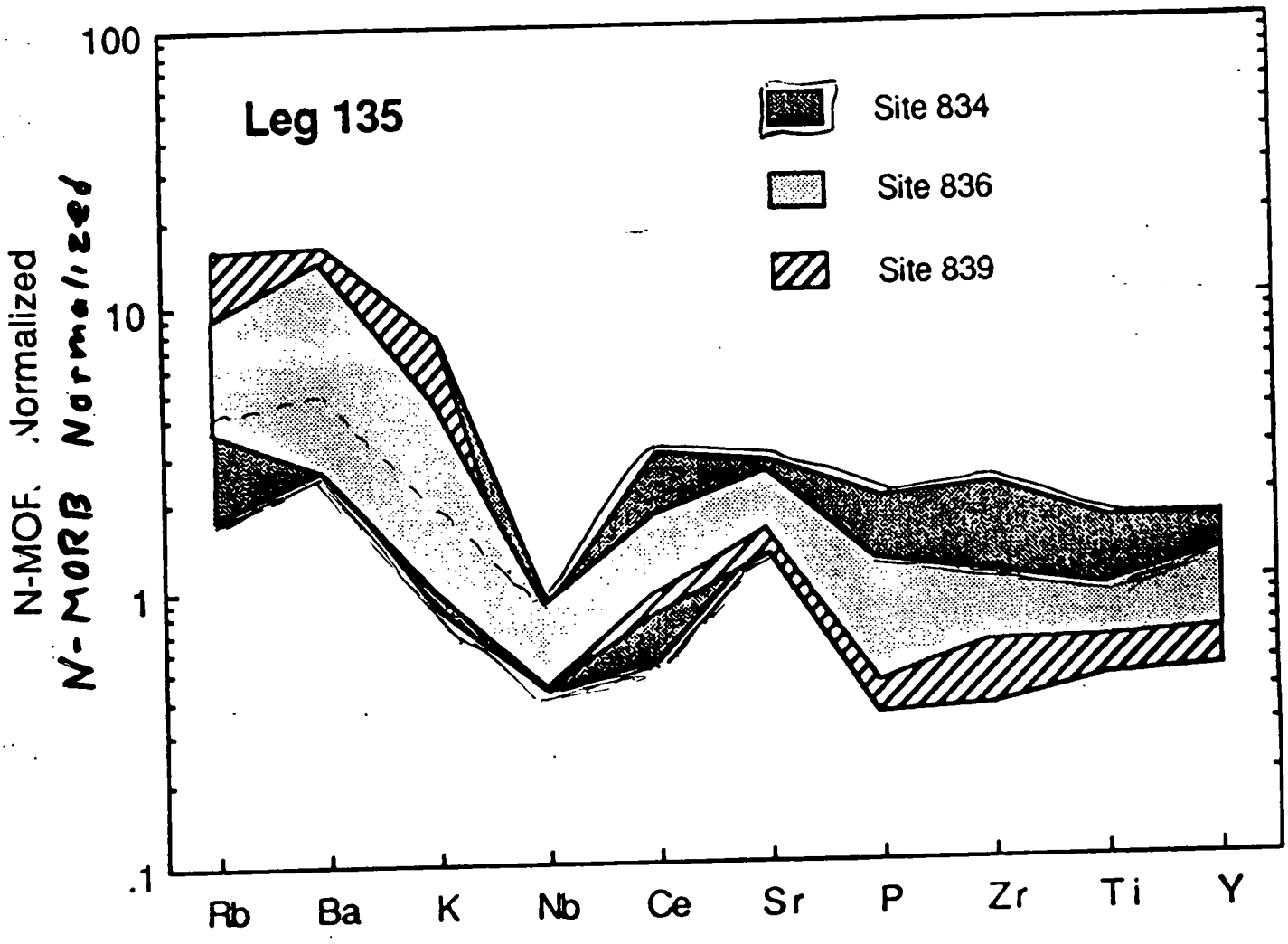
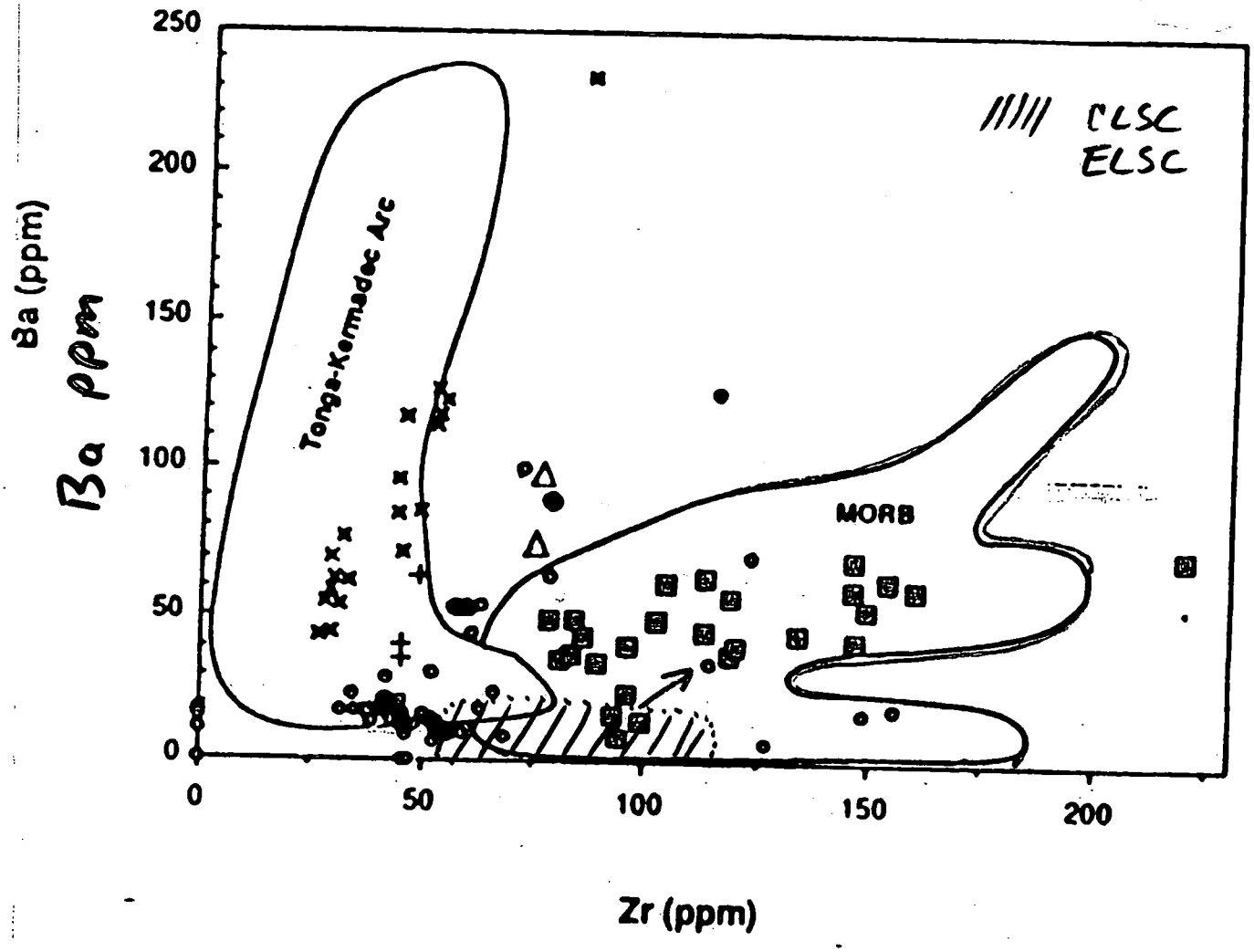
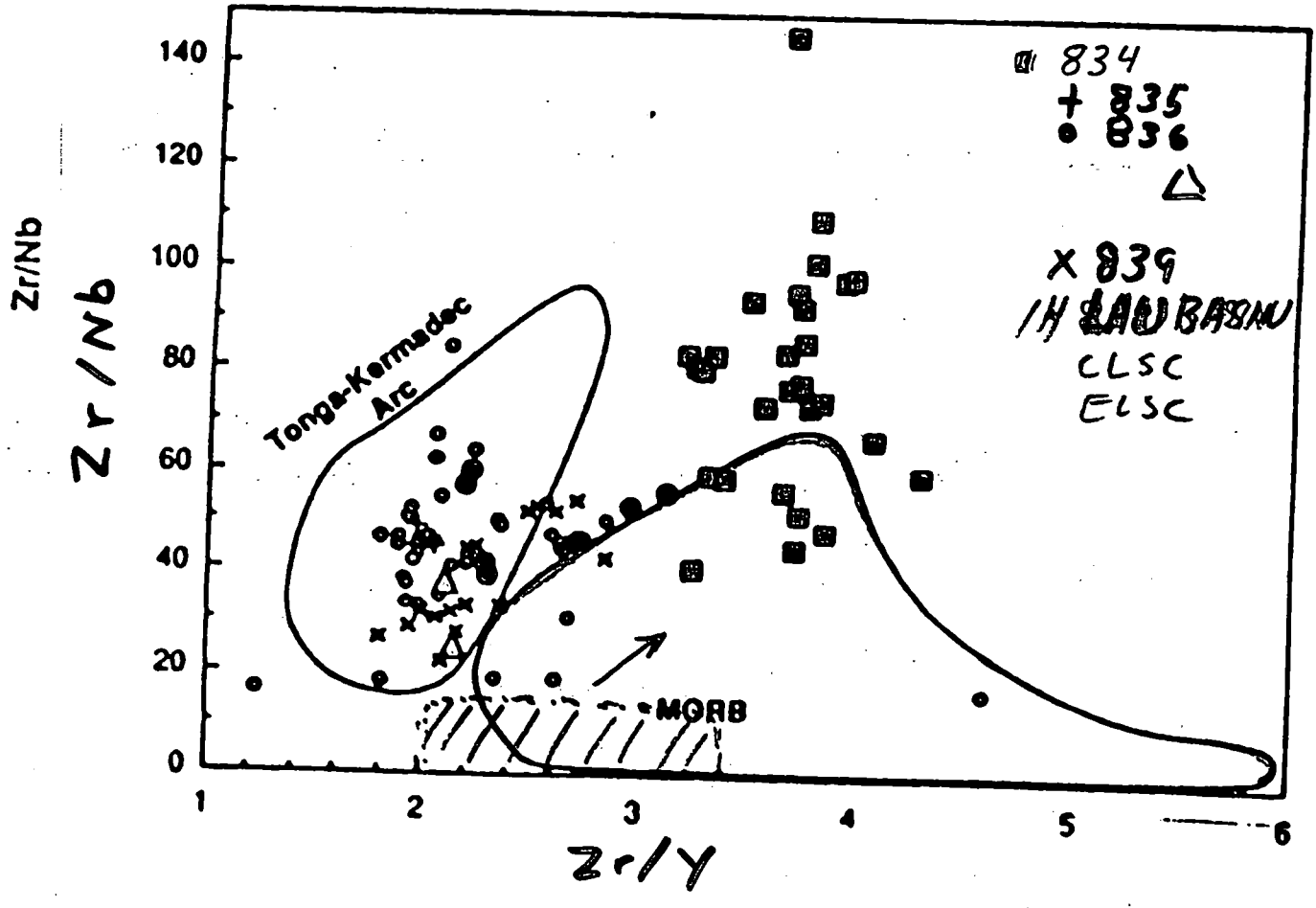


Figure Intro-14


Ba (ppm)
Ba ppm
250
200
150
100
50
0
0
50
100
150
200
Zr (ppm)
Tonga-Kermadec Arc
MORB
CLSC
ELSC


Zr/Nb
Zr/Nb
140
120
100
80
60
40
20
0
1
2
3
4
5
6
Zr/Y
Tonga-Kermadec Arc
MORB
834
835
836
839
CLSC
ELSC

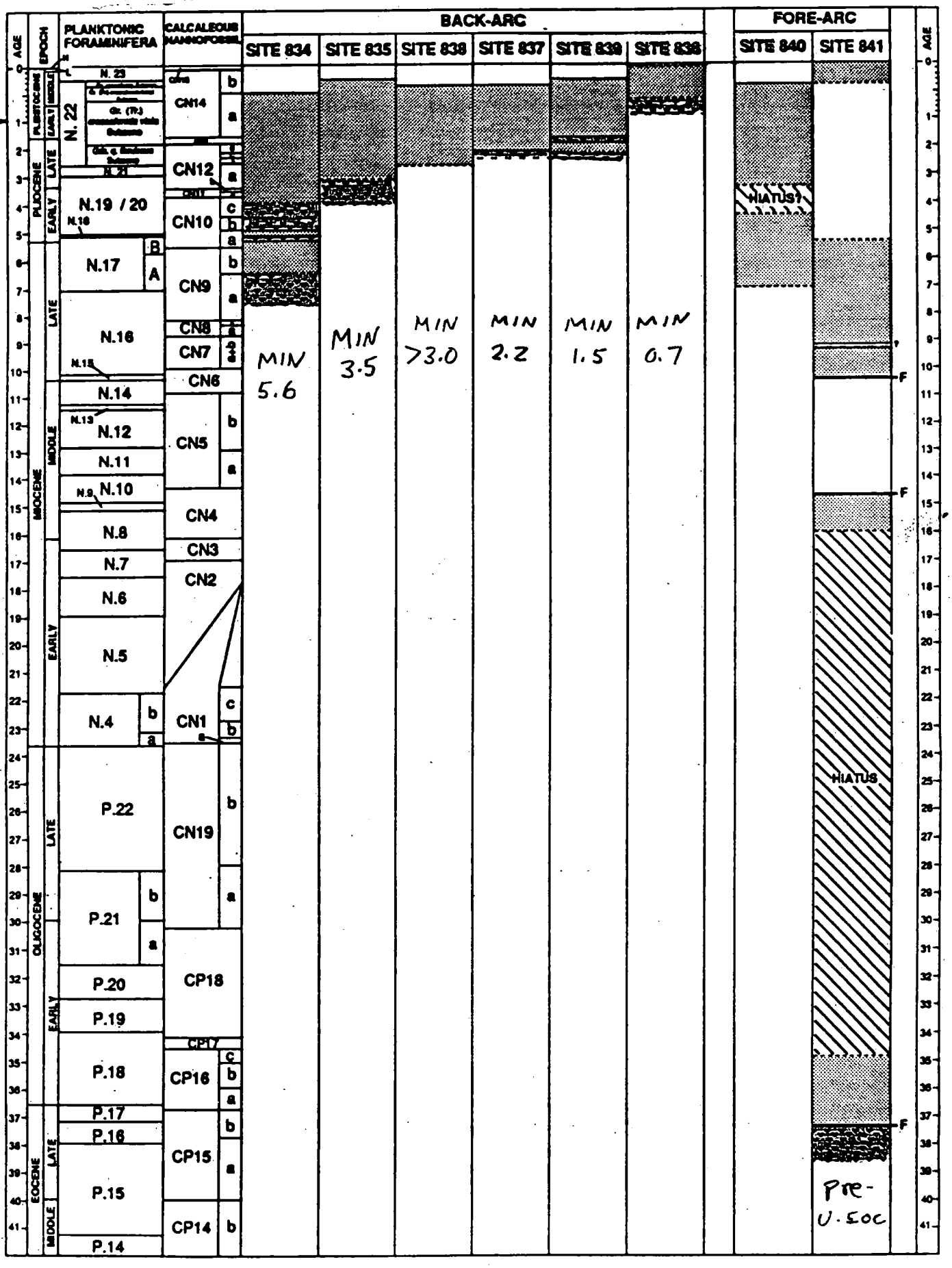
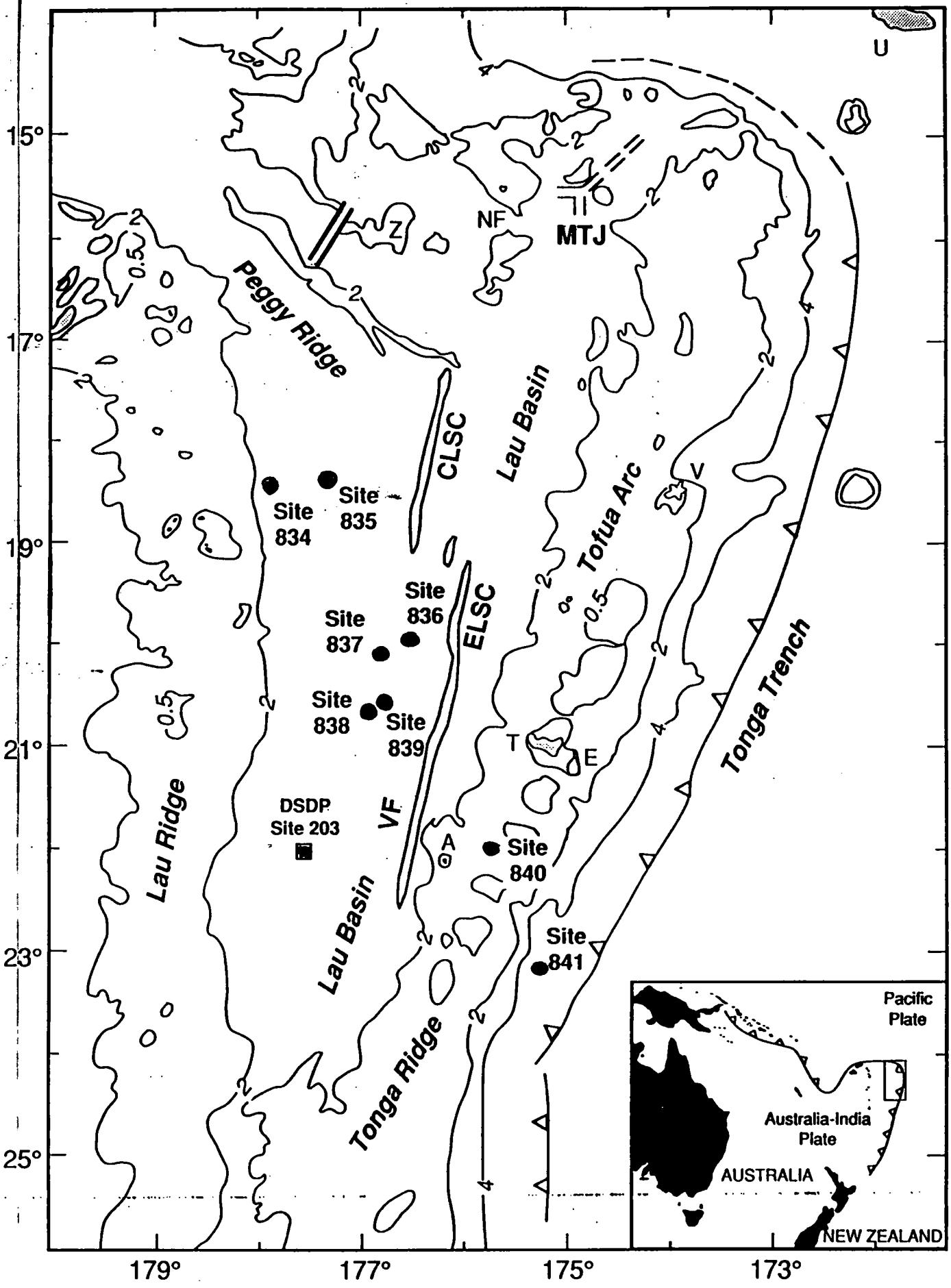


Figure Intro-8

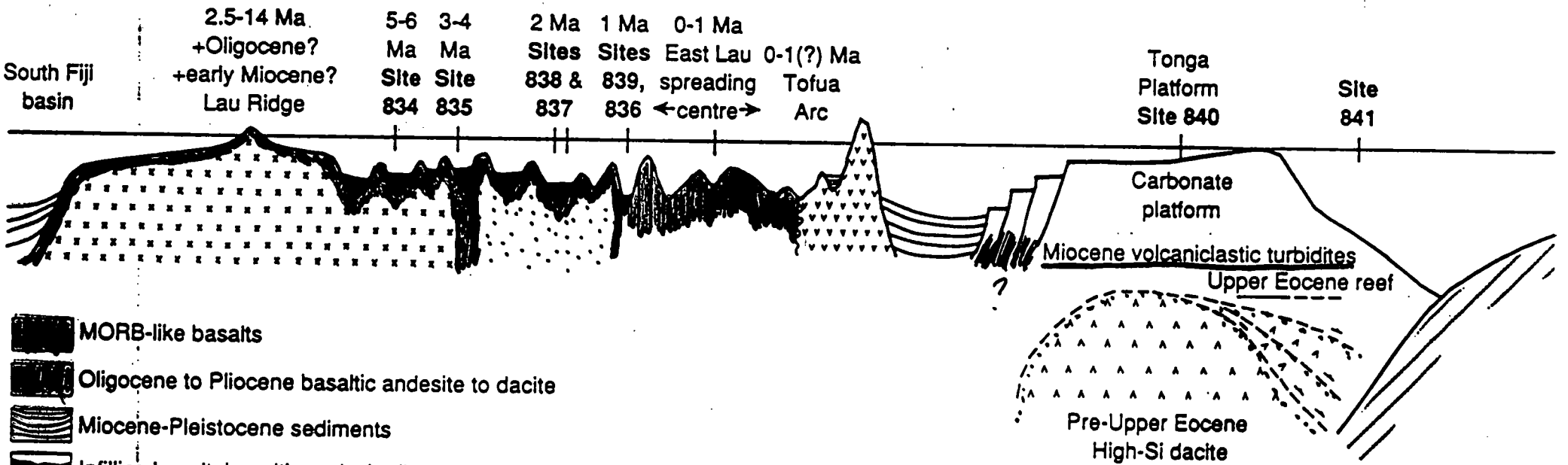
LEG 135

THE PROBLEMS

1. Backarc - Nature & Age of Crust
2. Basin extension - When? How?
3. Sub-basin filling - Provenance?
4. Arc - Backarc Magmatism
   Coeval? Episodic?
5. Forearc - Nature and Age of Crust
   arc? oceanic? forearc?
6. Uplift - Subsidence history
   Horizon A What is it?


15°
17°
19°
21°
23°
25°
179°
177°
175°
173°
U
Z
NF
MTJ
Peggy Ridge
CLSC
Lau Basin
Tofua Arc
V
ELSC
Site 834
Site 835
Site 836
Site 837
Site 838
Site 839
Site 840
Site 841
T
E
A
VF
DSDP Site 203
Lau Ridge
Lau Basin
Tonga Ridge
Tonga Trench
0.5
2
4
Pacific Plate
Australia-India Plate
AUSTRALIA
NEW ZEALAND

W



MORB-like basalts

Oligocene to Pliocene basaltic andesite to dacite

Miocene-Pleistocene sediments

Infilling basalt, basaltic andesite flows, some sills and dykes, with overlying sediments

Fault zones

Basaltic andesite to dacite

High-Si dacite ash-flow tuffs, welded tuffs, tuff-breccia

Probable backarc basin crust

00152

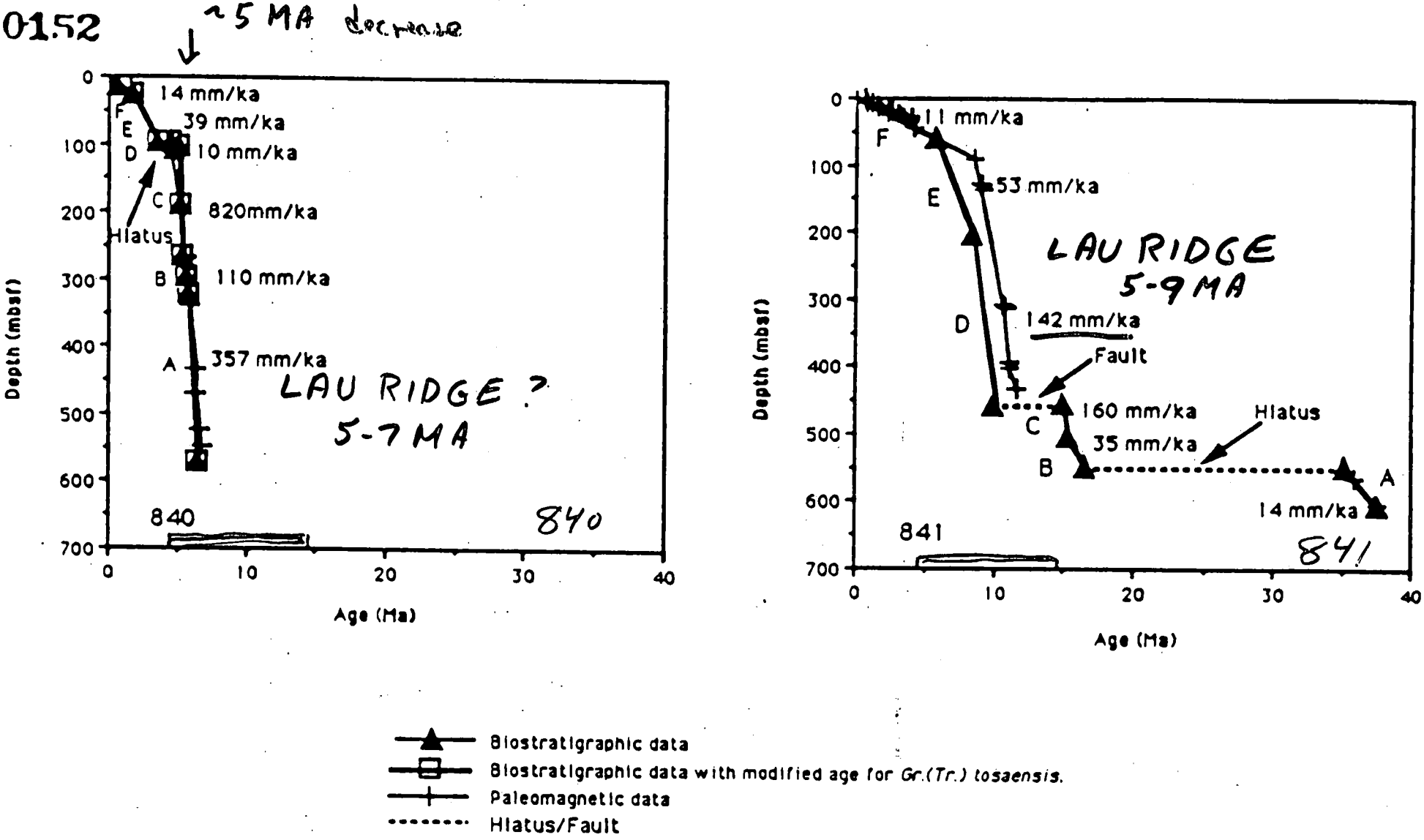
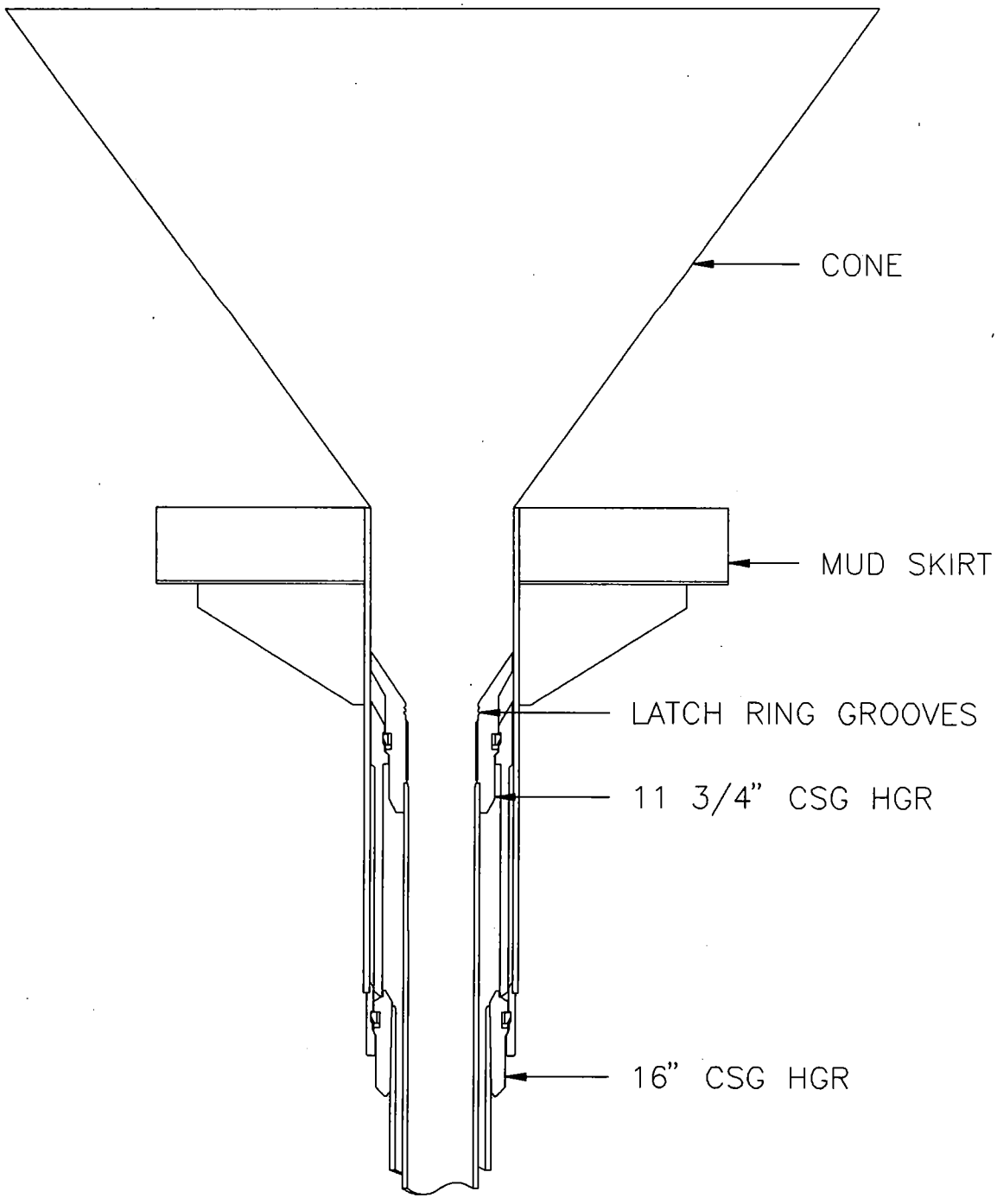
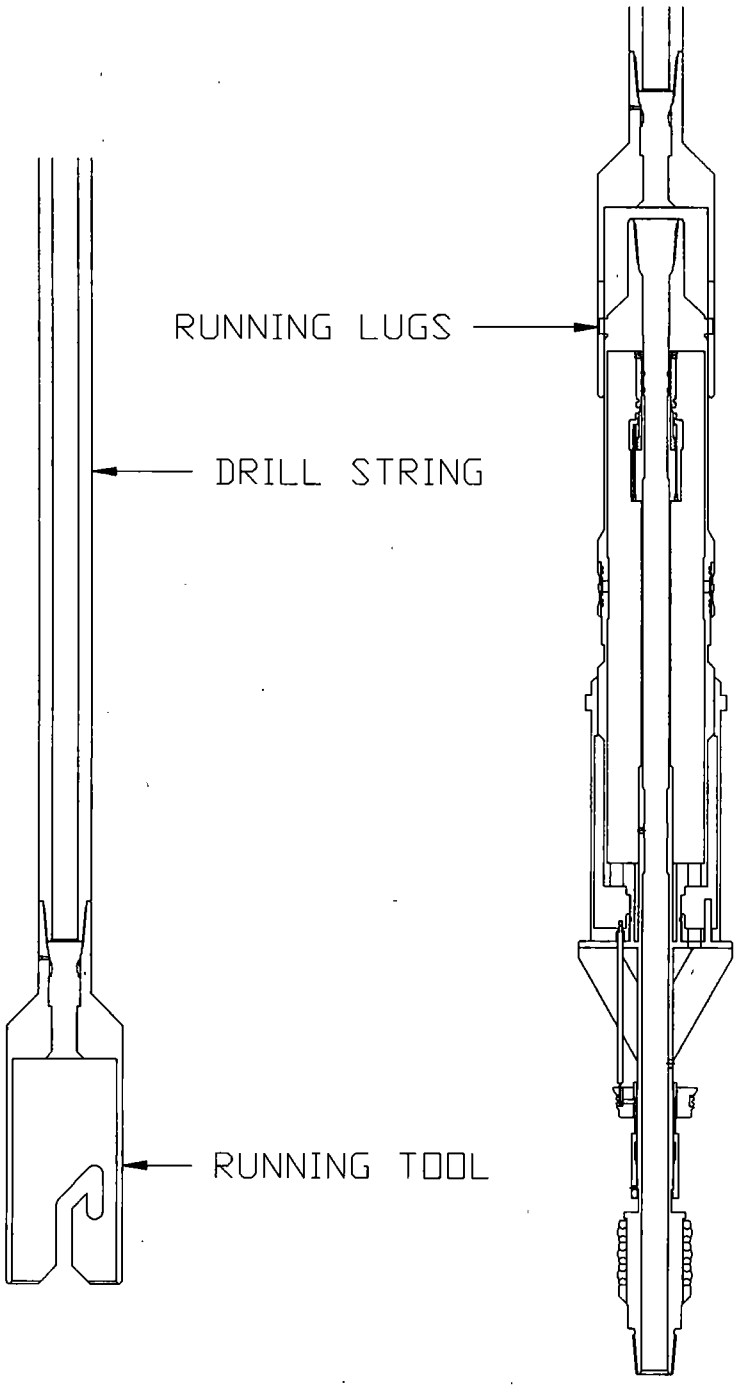
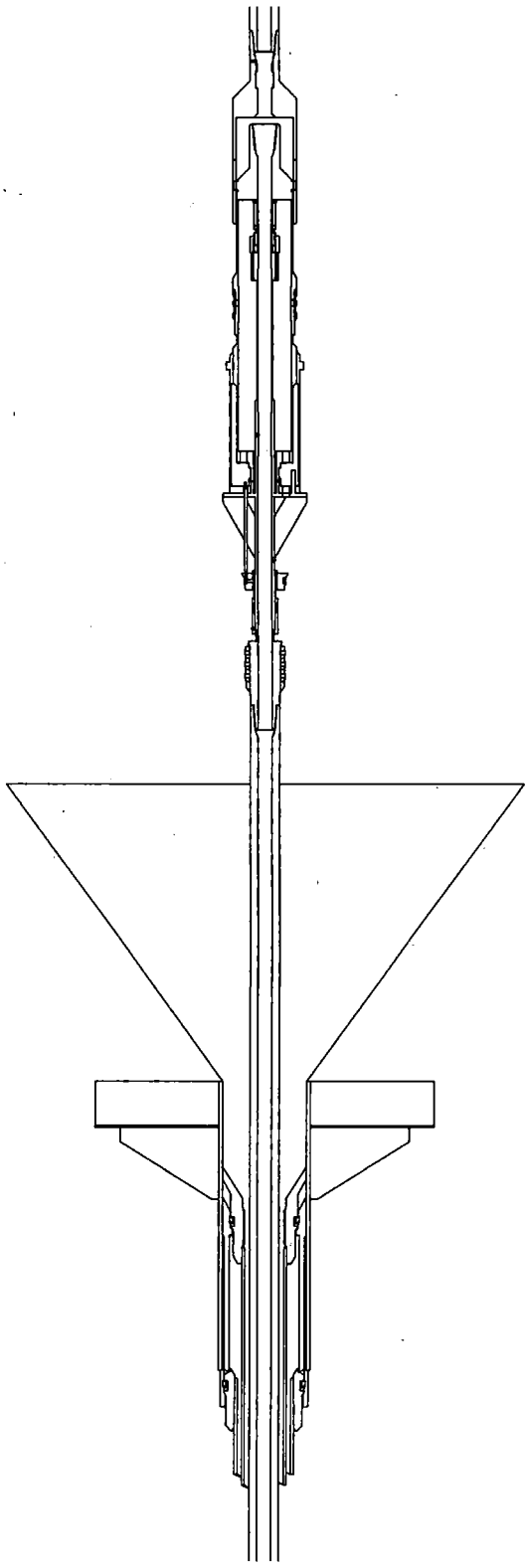


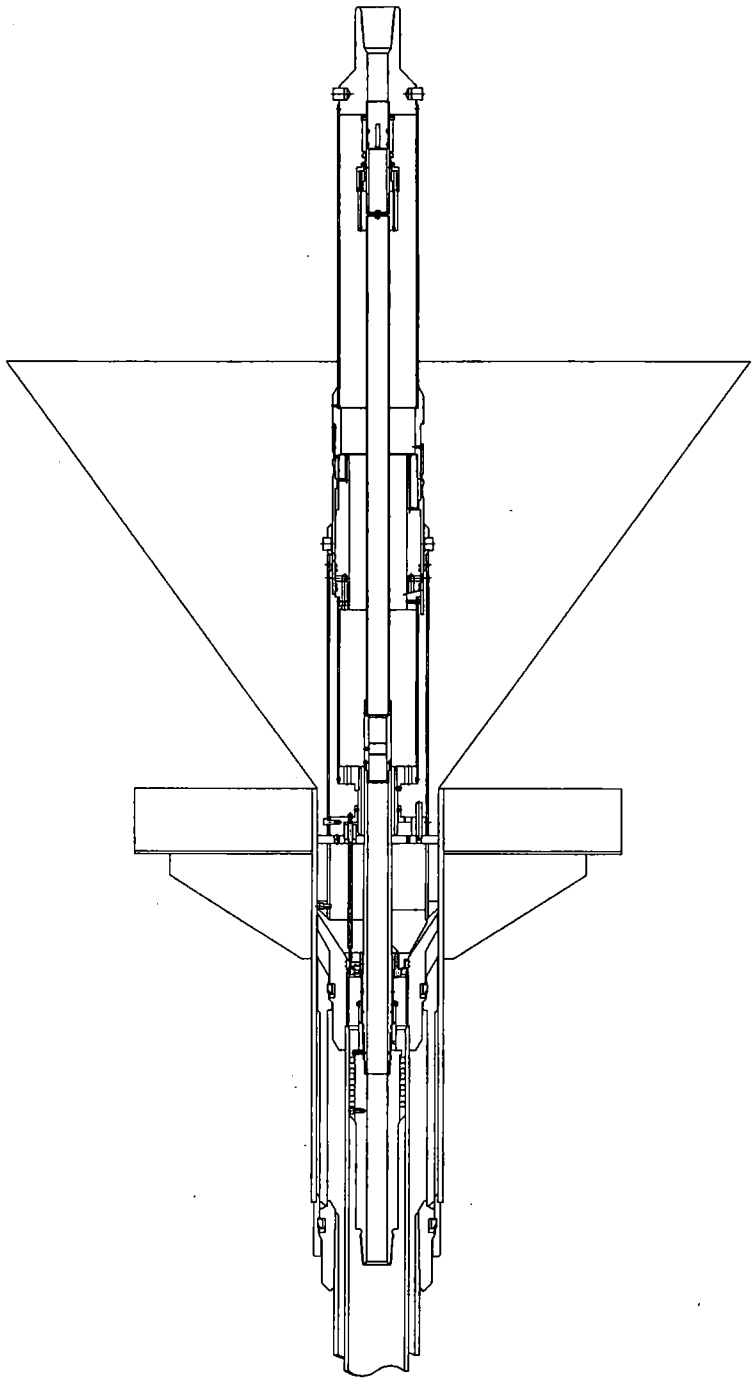
Fig. 135-INTRO-*2

APPENDIX 8


CONE
MUD SKIRT
LATCH RING GROOVES
11 3/4" CSG HGR
16" CSG HGR

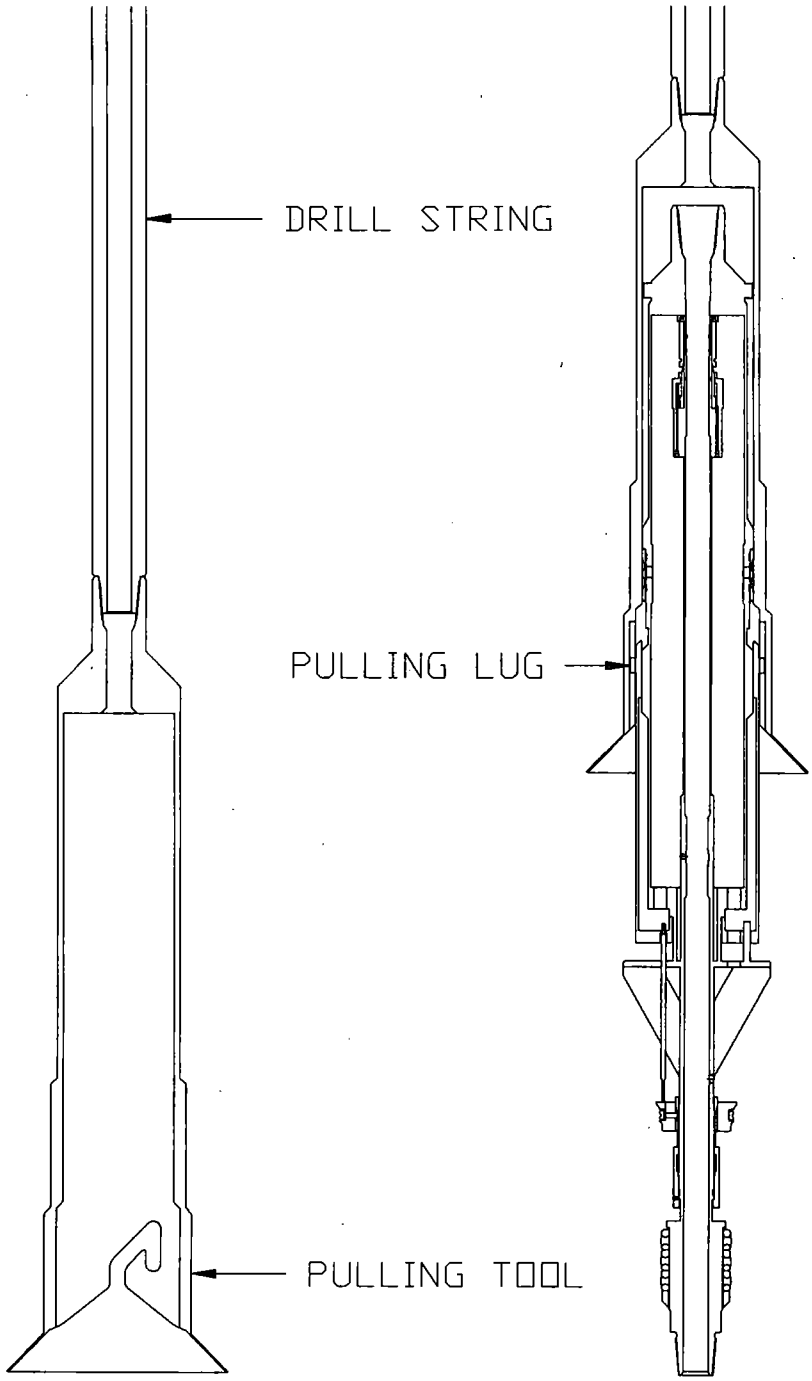

RUNNING LUGS
DRILL STRING
RUNNING TOOL

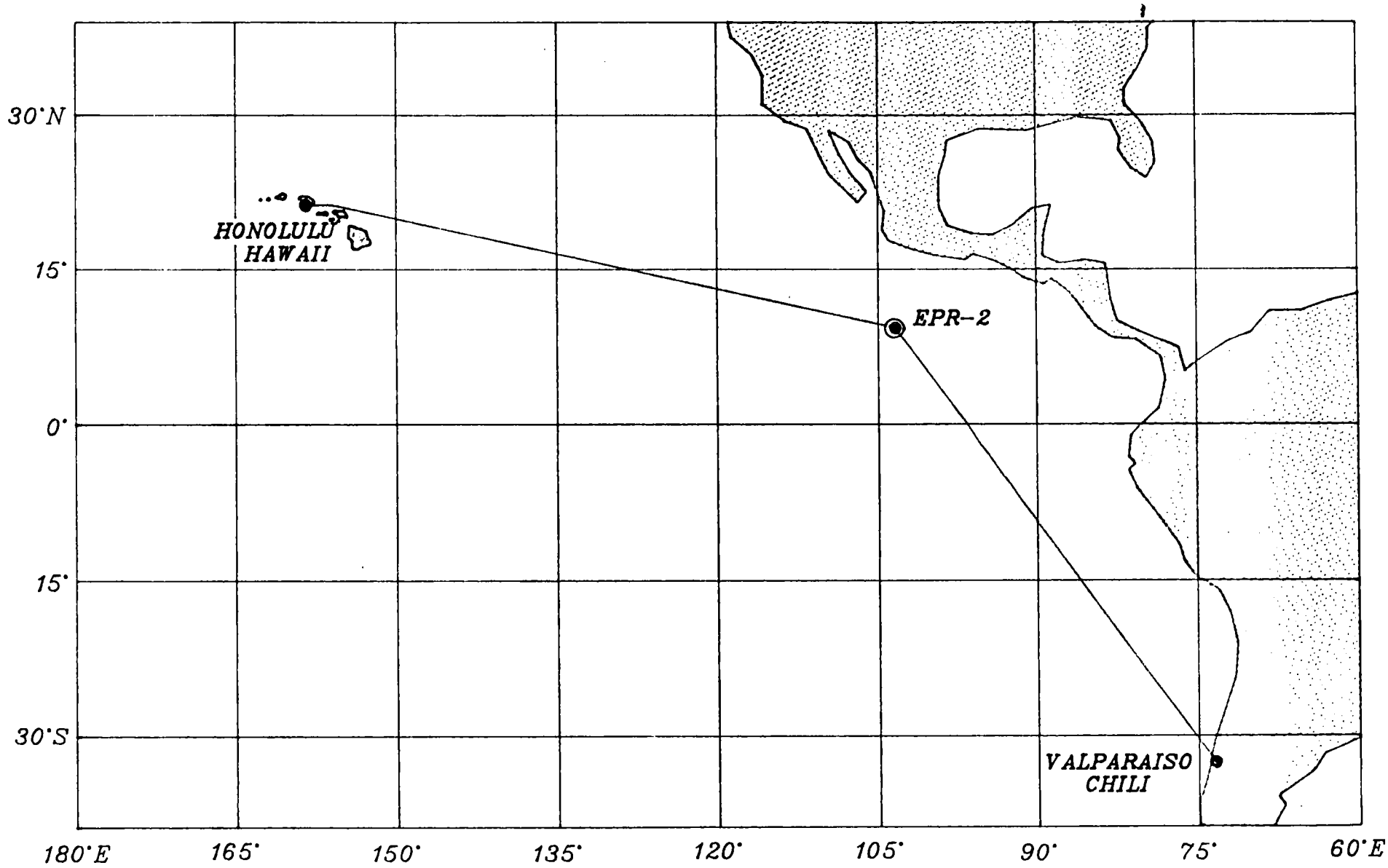




CORK

LEG 136 CONFIGURATION


DRILL STRING
PULLING LUG
PULLING TOOL



LEG 142 EAST PACIFIC RISE (ENGINEERING III)

APPENDIX 9

LEG 142 EAST PACIFIC RISE

ENGINEERING LEG III

LEG PARAMETERS

IN PORT VALPARAISO, CHILE	JANUARY 13-17, 1992
DEPART VALPARAISO, CHILE	JANUARY 18, 1992
TRANSIT TO EPR-1	13.2 DAYS
OPERATIONS ON SITE EPR-1	34.6 DAYS
TRANSIT TO HONOLULU, HAWAII	13.2 DAYS
ARRIVE HONOLULU, HAWAII	MARCH 19, 1992

TOTAL TRANSIT DAYS	26.4
TOTAL DAYS ON-SITE	34.6

SUMMARY OF DCS OPERATING TIME
(LEGS 124E AND 132)

LEG 124E STATISTICS

(BASED ON 16.5 DCS OPERATING DAYS)

* DCS OPERATIONS DERRICK/RIG FLOOR[1,2] 44%

* DCS CORING TIME[3] 5%

20 HOURS TOTAL OF WHICH 5 HOURS IS CONSIDERED EFFECTIVE CORING TIME.

LEG 132 STATISTICS

* DCS OPERATIONS DERRICK/RIG FLOOR[1,2] 38%

* DCS CORING TIME[3]

20 HOURS EFFECTIVELY CORING (2 BIT RUNS)
79.6 METERS CORED

FOOTNOTES:

1 - EXCLUDES CORING TIME.

2 - INCLUDES DCS TRIPPING, MAST/PLATFORM RIG UP, DCS COMPONENT CHECK OUT AND FUNCTION TESTING.

3 - INCLUDES WASH CORING, WIRELINE TIME, AND DRILLING AHEAD TIME.

LEG 142 EAST PACIFIC RISE

ENGINEERING LEG III

PRIMARY ENGINEERING GOALS

* MAXIMIZE CORING TIME WITH THE DIAMOND CORING SYSTEM.

* PRIOR TO INITIATING DCS CORING OPERATIONS THE FOLLOWING WILL HAVE TO BE DONE:

    * DEPLOY NEW 3-LEG/HEX SIDED HARD ROCK GUIDE BASE.

    * DEPLOY PRIMARY (1ST STAGE) DRILL-IN-BHA TO A LIMITED DEPTH (5-10 METERS).

* IF TIME PERMITS, AFTER INITIAL DCS CORING OPERATIONS HAVE BEEN COMPLETED THE FOLLOWING SYSTEMS OR TECHNIQUES SHOULD BE EVALUATED:

    * EVALUATE A NEW DIAMOND REAMING BIT DESIGNED TO REAM 4" DCS HOLES OUT TO 7-1/4" OD.

    * DEPLOY AND EVALUATE 2ND STAGE DI-BHA SYSTEM.

    * CORE WITH A NEW DIAMOND CORE BARREL (DCB) WHICH DRILLS A 7-1/4" DIAMETER HOLE, USES 6-3/4" DRILL COLLARS, AND USES STANDARD ODP RCB WIRELINE CORE BARREL COMPONENTS.

LEG 142 EAST PACIFIC RISE

ENGINEERING LEG III

PRELIMINARY OPERATIONS PLAN

* DEPLOY MINI HARD ROCK GUIDE BASE AT EPR SITE
* DEPLOY FIRST STAGE DRILL-IN-BHA
* DEPLOY DIAMOND CORING SYSTEM
* ATTEMPT SLIM HOLE TEMPERATURE/CALIPER LOG
* ATTEMPT REAMING 3.96" DCS HOLE
* IF STABLE ATTEMPT TO LOG 7-1/4" HOLE
* DEPLOY SECOND STAGE DI-BHA
* DEPLOY DCS AND CONTINUE SLIM HOLE CORING OPS

LEG 142 EAST PACIFIC RISE

ENGINEERING LEG III

SECONDARY ENGINEERING GOALS

* EVALUATE DIAMOND CORE BARREL SYSTEM
  (7-1/4" DIA BIT, 6-3/4" DRILL COLLARS, RCB C'BBL)

* EVALUATE SECOND STAGE "NESTED" DI-BHA
  (7-1/4" DIA BIT, 6-3/4" DRILL COLLARS)

* SLIM HOLE TEMPERATURE/CALIPER LOGS
  (FOR 3.96" DIAMETER DCS HOLE)

* STANDARD TEMPERATURE/CALIPER LOGS
  (FOR 7.25" DIAMETER DCB HOLE)

* EVALUATE DIAMOND BITS VERSUS TCI/RC BITS
  (FOR 1ST STAGE DI-BHA)

LEG 142 EAST PACIFIC RISE

ENGINEERING LEG III

A SECOND HARD ROCK GUIDE BASE (HRB) MAY BE DEPLOYED BUT ONLY UNDER THE FOLLOWING CONDITIONS:

(1) THE INITIAL HRB/HOLE IS LOST AND DEEMED UNRECOVERABLE.

(2) CONTINUED CORING OPERATIONS ON THE INITIAL HOLE ARE PREVENTED DUE TO TEMPERATURE OR H_2S CONCERNS.

(3) DCS CORING IS AHEAD OF SCHEDULE AND CANNOT CONTINUE DUE TO OTHER CONSTRAINTS SUCH AS DRILL ROD SHORTAGE, OR MECHANICAL MALFUNCTION.

(4) SECOND GUIDE BASE IS REQUIRED FOR EVALUATION OF DIAMOND CORE BARREL CORING SYSTEM.

LEG 142 EAST PACIFIC RISE

ENGINEERING LEG III

SPECIFIC ENGINEERING GOALS

* EVALUATE PLATFORM MODS
  * IMPROVED DCS WINCH/TUGGER CONTROL SYSTEM
  * EVALUATE SECONDARY HEAVE COMPENSATOR MODS
  * EVALUATE LOW FRICTION SEALS F/HYD FEED CYLINDERS
  * EVALUATE HIGH PRESSURE POWER PACK FILTER SYSTEM
* EVALUATE NEW MINI HRB HEX DESIGN
  * 3 LEG/HEX SIDED DESIGN
  * COUNTER BALANCE GIMBAL ELIMINATES FLOATATION
  * 8 FT DIAMETER REENTRY CONE
* EVALUATE NESTED DI-BHA SYSTEM
* EVALUATE DCB, 1ST/2ND STAGE DI-BHA BITS, AND CTR BITS
  * 2-CONE, 4-CONE, 6-CONE HYBRID TCI BITS
  * IMPREGNATED/CARBONADO DIAMOND BITS
  * 1-CONE, AND 2-CONE CENTER BITS
* EVALUATE MODS TO HQ DCS CORE BARREL
* EVALUATE CSG ADVANCER LATCH F/DI-BHA CENTER BIT
* EVALUATE RE GUIDE/DEPLOYMENT ASBLY F/DCB & DI-BHA
* EVALUATE HQ C'BBL SAMPLING OPTIONS (AS REQUIRED)

DIAMOND CORING SYSTEM PHASE IIB

STATUS REPORT - FOR LEG 142

* CONTRACTS AWARDED/WORK IN PROGRESS

* MAST/PLATFORM/POWER PACK	DRECO
* MINI HRB MODS	SUBSEA
* DI-BHA SYSTEMS, ETC.	HOU ENGRS
* DI-BHA BITS/CTR BITS	SECURITY
* CSG ADVANCER LATCH, ETC	CHRISTENSEN
* DCS DIAMOND BITS	DIAMATEC
* DCS DIAMOND BITS	HUDDY
* DCS DIAMOND BITS	LONGYEAR
* DCS C'BBL MODS/SAMPLERS	LONGYEAR
* XCB LATCH MODS F/CTR BITS	MWI

* CONTRACTS REMAINING TO BE AWARDED

* DCS SAFETY SLINGSHOT TEST	DRECO
* SECONDARY HEAVE COMPENSATOR MODS	"TBD"
* DCB/DI-BHA STABILIZERS, X-OVERS	TRI-LOR
* ADDITIONAL DI-BHA CTR BITS	RBI
* HRB BALLAST	"TBD"
* REVIEW OF TENSIONING REQUIREMENTS	"TBD"
* MINOR DCB COMPONENTS	"TBD"

DIAMOND CORING SYSTEM - PHASE III
RISER TENSIONER CONCEPT

STATUS REPORT

* REQUEST FOR PROPOSALS OUT TO INDUSTRY

* RESPONSES DUE AT TAMU BY MID MAY 1991

* PRELIMINARY DESIGN IS PRESENTLY SCHEDULED FOR COMPLETION BY LATE JUNE 1991

* PRELIMINARY DESIGN WILL BE DISCUSSED AT THE JULY 1991 TEDCOM MEETING IN SAN DIEGO

* AT THAT TIME THE FOLLOWING WILL BE MORE REFINED:

    * COST ESTIMATES FOR PHASE III SYSTEM

    * DEVELOPMENT SCHEDULES

    * ACHIEVABLE SYSTEM OPERATING PARAMETERS

    * SYSTEM LIMITATIONS

APPENDIX 10

April 19, 1991

ODP DEVELOPMENT ENGINEERING

ACTIVE PROJECTS

* MAST / PLATFORM MODS (DCS PHASE IIB) F/L142
* NESTED DI-BHA SYSTEM F/L142
* MINI-HRB DESIGN IMPROVEMENTS F/L142
* SPECIAL DI-BHA BITS, CTR BITS, DIA BITS F/L142
* DIAMOND CORE BARREL SYSTEM
* DCS SLINGSHOT SAFETY TEST
* DCS - III DEVELOPMENT (RISER TENSIONER CONCEPT)
* HI-TEMP / H_2S PREPARATIONS F/L139
* XCB/FLOW CONTROL SYSTEM
* VIBRA PERCUSSIVE CORER
* MOTOR DRIVEN CORE BARREL F/L141
* SONIC CORE MONITOR F/L141
* HARD ROCK ORIENTATION
* ELECTRONIC MULTISHOT

(CONTINUED)

April 19, 1991

ODP DEVELOPMENT ENGINEERING

ACTIVE PROJECTS
(PAGE 2)

* CORK
* PCS: MANIFOLDS / HI-TEMP MODS / SPARES
* XCB CUTTING SHOES
* HYDROLEX DRILLING JARS
* TOTCO RIG INSTRUMENTATION SYSTEM
* BEACON UPGRADES
* LEG 132 DOCUMENTATION / MANUALS

April 19, 1991

ODP DEVELOPMENT ENGINEERING

DORMANT PROJECTS

(NOT SCHEDULED FOR 1991-1992)

* BREAKAWAY PISTON HEAD FOR APC
* ANTI-WHIRL PDC BITS
* SONIC CORE MONITOR / MWD
* SPECIAL PREP FOR LEG 147 (EPR OR HESS DEEP)
* MINI-HRB (RCB VERSION) FOR HESS DEEP (?)
* 2-CONE (OFFSET HOLE) BIT FOR DCS DI-BHA
* VIT FRAME REDESIGN
* MOONPOOL LOAD HANDLING UPGRADES
* TV WINCH LINE LOAD MEASURING
* TV COAX ROUTING FOR THRU-THE-PIPE OPERATIONS
* TECHNICAL REPORTS - ALL NEW ODP TECHNOLOGY
* WRITE SEVERAL OVERDUE USER'S MANUALS

April 19, 1991

ODP DEVELOPMENT ENGINEERING

UNSCHEDULED PROJECTS WITH MERIT

FOR MORE / NEW / BETTER SCIENCE

* DEEP DRILLING STUDY
* HRO ADAPTATION FOR 504B (NON-RCB)
* POWERED LINER REMOVAL SYSTEM
* APC CUTTING SHOE WATER SAMPLER
* SIDEWALL SAMPLER

FOR IMPROVED RIG OPERATIONAL EFFICIENCY

* AUTOMATIC SINKER BAR STAB SYSTEM
* UPPER GUIDE HORN NECESSITY STUDY
* PIPE STRESS GUIDELINES FOR OPS SUPTS.
* FLOAT VALVE IMPROVEMENTS
* MECHANICAL BIT RELEASE UPGRADES

Downhole Measurements
Near-term Technology Development Plans

136 Oahu — **hole** *sealing feasibility*

137 504B clean — *French temperature*
flow permeability
LANL & Lawrence-Berkeley fluid

138 E. Eq. Pac. — ready

139 sed ridge 1 — hole cooling
high-T temperature **& fluid**
digital high-T *televiewer*
hole *sealing*
high-T cable
~~*geoprops?*~~
flow permeability

140 504B — high-T temperature **& fluid**
high-T cable
~~wireline packer?~~
German magnetometer

141 Chile TJ — ready

142 EPR DCS — high-T temperature **& fluid**
dewared resistivity?
~~**reaming?**~~
high-T cable

or_____
ODP-Lamont
ODP-TAMU
3rd party

4/91 WIRELINE PACKER STATUS

As of last PCOM:

1) tool deployed twice on Leg 133. All systems worked unsatisfactorily.
2) DMP asked BRG for an analysis of modifications needed.

Since last PCOM:

1) BRG completed analysis and reported to DMP.
2) DMP still has questions about technical and scientific feasibility. DMP requested a meeting of specialists; LITHP agreed.
3) SGPP placed a high priority on wireline packer development, esp. for Atolls & Guyots.
4) no money has been committed to wireline packer for either FY91 or FY92.

Summary of current status:

1) ≈$300K invested to obtain current prototypes; another $240K±$70K required for production tools (Version 2).
2) no guarantee that production tools would fulfill all hopes.
3) no viable alternative identified (OBCAT?).
4) delays forfeit some prime applications of tool.

TECHNICAL SUPPORT GROUP, ODP

Shipboard Technical Functions

Dedicated Positions	
Laboratory Officer	(1)
Assistant Lab Officer	(1)
Yeoman	(1)
Photographer / Microscopes	(1)
Chemistry Technician	(2)
Electronics Technician	(3) (includes Downhole Tool Tech)
Curatorial Representative	(1)
System Manager	(1)
Total	**11**

Core Lab Technician + Additional Responsibility(s)	
X-ray Technician	(1)
Physical Properties Tech	(1)
Underway Geophysics Tech	(1)
Storekeeper	(1)
Thin Section Technician	(1)
Formation MicroScanner Tech	(1)
Paleomagnetics Technician	(1)
Total	**7**
Grand Total	**18**

This established staffing level would require **2 x 18 = 36 FTEs.** The FY92 Program Plan lists:

Regular Sea-going FTEs	
Marine Scientists	23
Marine Engineers	5
System Managers	2
Lab Officers (only one per leg)	3
Total	**33**
Effective Total	32 (only one Lab Officer per Leg)

An additional 4 Marine Scientists are needed to achieve maintenance level. The deficit is currently handled by: (1) sailing one student per leg (2) one Marine Engineer is hired by SOE funds (3) one Marine Scientist is funded by the LDGO BoreHole Research Group (4) sailing less than 18 Technicians on some Legs.

STATUS OF EQUIPMENT RECOMMENDATIONS (*1)

Rock Eval	PPSP, SMP (1)*A	In Progress
Natural Gamma	DMP, SMP (2)	Under Investigation
Paleontology Software	SMP (3a)	Phase I Completed
Computers for Paleontology Lab	SMP (3b)	Purchased
Mac II Physical Properties Lab	DMP, SMP (4)	In Progress
Automated Carbonate System	SMP (5)	Under Investigation
Whole Core Photocopier	SMP (6)	Under Investigation
Magnetic Susceptibility Probe	SMP (7)	Removed from List
Magnetometer (tow)	SMP (8)	Under Investigation
Digital Image Scanner	SMP	Purchased, Phase I Completed
Upgrade CNS to CHNS	SMP	In Progress
Real Time Navigation	SMP, SSP, CC	In Progress
Whole Core Radiography	CC	Under Investigation
Temperature Susceptibility	SMP	Removed from List
Angstrom Shatterbox	SMP	Purchased
ARM Coil	SMP	Purchased
Core Description Computerization	SMP	Phase I Completed
Graphics Software IBM-PC	SMP	Purchased
Portable Cleanhood	SMP	Purchased
XRF Standards	SMP, CC	Purchased
Titanium Squeezers	SMP, CC	Purchased
PCS Phase II	SMP	Pending 3rd Party Development
HF Acid Tank	SMP	Completed
Grinding Vessels	SMP, CC	Purchased
WSTP Tools	DMP	Purchased
Digital Velocimeter	SMP	Purchased

(*1) Status of recommendations for NEW equipment made from 1989-April 1991.

(*A) Prioritization by SMP.