TUCHOLKE

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Columbia University, Lamont-Doherty Geological Observatory

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Woods Hole Oceanographic Institution

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University of California in San Diego, Scripps Institution of Oceanography

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University of Miami, Rosenstiel School of Marine & Atmospheric Science

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USSR Academy of Sciences P.P. Shirshov Institute of Oceanology, Moscow

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Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover

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Centre National pour L'Exploitation des Oceans, Paris

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University of Hawaii at Manoa, Hawaii Institute of Geophysics

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Natural Environment Research Council, London

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Oregon State University, School of Oceanography

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JOIDES JOURNAL

NOVEMBER 1975 EDITION 1975/3

THINKING DEEPLY ...

So far the deepest hole drilling by GLOMAR CHALLENGER is at site 391c in the western North Atlantic during Leg 44. Prior to this site 361, penetrating 1314 m into the lowermost Aptian in the S.E. Atlantic during Leg 40, held the record. The third deepest hole is at site 222, penetrating 1300 m into the lowermost Miocene of the Arabian Sea during Leg 23.

Two obvious factors constrain the depth of ocean drilling. Firstly, the depth of the sea which in most areas absorbs the majority of the drill string length. The second factor is the maximum length of drill string which the ship is able to support. The maximum length so far suspended beneath GLOMAR CHALLENGER is 6.7 km, though it is anticipated that this will be increased to 8.2 km during the IPOD program. Even so, with a sea water depth of, say, 5 km this only leaves the option for a maximum of 3 km penetration beneath the sea floor. This is one of the reasons why many active margin sites located in deep ocean trenches must await the IPOD II capabilities. In general, IPOD I is optimistic of a 2 km penetration.

A third consideration is the technical feasibility. Drilling technology is now capable of drilling to considerably greater depths on continents where penetrations of 9 km have been achieved. This was through sedimentary rocks however, and to penetrate similar depths through crystalline basement demands considerably greater technological innovation, involving new designs for casing, drill string and bits and using materials resistive to rock temperatures of 250-1000°C and corrosive high temperature fluids.

University of Rhode Island, Graduate School of Oceanography *

Texas A&M University, Department of Oceanography *

Ocean Research Institute, University of Tokyo *

TENTATIVE DRILLING SCHEDULE (10/75)

Leg	Departure Port	Date	Sites/Objectives	Panel Interests
		1975		
45	San Juan	*25 November	5 alt = 6 or 3 MAR	OC
		1976		
46	San Juan	20 January	5, 6 or 3 ± 7 E-W Transect	OC
47a	Las Palmas	16 March	20, NW Africa	PM
47b	Casablanca	16 April	17, Galicia Bank	
48	Lisbon	11 May	18, 19 Biscay, Rockall	PM
49	Dublin	6 July	Norwegian Sea	OC/PM
50	Reykjavik	31 August	9-14 Longitudinal traverse	OC
51	Azores	27 October	4,3,2,2a ± 6 MAR Traverse E-W	OC
52	San Juan	21 December	Caribbean Venezuela Basin	OC/AM
		1977		
53	Balboa	15 February	PAC 5 & 6	OC
54	Honolulu	12 April	NW of Hawaii	OP
55	Honolulu	7 June	M1, Seamounts	AM/OC
		(10 days dry dock)		
56	Tokyo	12 August	Sea of Okhotsk & Japan Trench	AM
57	Kobe	7 October	Philippine Sea	AM
58	Guam	2 December	" + Shikoku Basin ± China Sea	AM
		1978		
59	Guam	27 January	Nauru Basin ± Philippine Sea	OC
60	Honolulu	24 March	Paleoenvironment sites	OP
61	Acapulco	19 May	EPR	OC
62	Acapulco	12 July	Gulf of California	OC/PM
63	Acapulco	6 September	Siqueiros Fracture Zone	OC
64	Acapulco	1 November	M. America Trench	AM
65	Balboa	27 December	Vema Fracture Zone	OC
		1979		
66	Recife	23 February	S. Atl. Angola Basin	OP
67	Luanda	19 April	S. Atl. Walvis Ridge	OP
68	Dakar	14 June	W.N. Atl. margin	PM
69	Norfolk	19 August	Site 1	OC/PM

*This commencement date is tentative and likely to be postponed by approximately 5 days.

Put into a global perspective, even 9 km of penetration is only approximately .014% of the earth's radius and in some respects we still have less direct knowledge of the earth beneath our feet than we have of outer space.

REPORT FROM THE EXECUTIVE COMMITTEE

JOIDES Membership

There are now 14 member institutions of JOIDES. These are listed on the front cover of this edition of JOIDES Journal in the order of rotation of the chairmen of the JOIDES Executive and Planning Committees, with the seven new members who joined this year having been added alphabetically to the end of the list.

The re-organization of the U.S. membership of JOIDES continues to be under deliberation and is likely to take the form of a non-profit corporation. This will be related to the present JOIDES structure at the JOIDES Executive Committee level. It is not intended that this re-organization will in any way interrupt or change the present structure or function of JOIDES. The advantages of the corporate structure will be that contractual agreements can then be made directly with NSF, giving JOIDES an enhanced role of conceptual and scientific sponsorship of the drilling project as well as that of providing scientific advice.

Industrial Liaison Consultation Group

It is felt that there is a need for mutually beneficial relationships to be established between the larger petroleum companies and JOIDES. At present, our negotiations with these companies occur on a random basis and it is now intended to formalize a channel of communication by suggesting that a representative be designated by each of the various companies through whom all JOIDES communications could be channelled. This will provide an orderly and effective means by which industrial organizations can assist JOIDES, particularly by consulting on scientific objectives and providing data and recommendations pertinent to the selection of specific drilling sites. In return, the liaison person will have early cognizance of the drilling plans and be able to have input into JOIDES at the planning stage.

The choice of petroleum companies will probably be the major companies in western countries and possibly smaller companies elsewhere. Representation outside the U.S. would not be restricted to countries having a member institute in JOIDES.

Distribution of Initial Reports within the U.S.

The Executive Committee feels some concern for the way in which collections of Initial Reports are taking place. Since the inception of DSDP, reports have been distributed to members of panels and committees. Now that panel and committee membership is subject to frequent review and change, the Initial Report series are tending to be collected in many incomplete sets. While it is recognized that the Initial Reports are often the only tangible reward for panel and committee membership, a more logical distribution of volumes is required. The distribution of these volumes to the non-U.S. member institutions is by way of a bulk allocation of 100 volumes, which are logically distributed, mainly to libraries. One of the problems with changing the present mode of distribution is that additional copies of the Initial Reports are relatively difficult to obtain via the Government Printing Office. Once these become more rapidly available, the current distribution policy will be reviewed.

In an effort to assist the acquistion of Initial Reports, the catalog numbers and prices are given here, with the address to which orders should be sent. Please note that there is no facility for air mail delivery of the volumes.

INITIAL REPORTS OF THE DEEP SEA DRILLING PROJECT

CATALOG NO.	DRILLING SITES	UNIT PRICE*
NS 1.2:D 36/2/VOL. 1	1-7	Out of Print
NS 1.2:D 36/2/VOL. 2	8-12	Out of Print
NS 1.2:D 36/2/VOL. 3	13-22	Out of Print
NS 1.2:D 36/2/VOL. 4	23-31	$17.60
NS 1.2:D 36/2/VOL. 5	32-43	15.50
NS 1.2:D 36/2/VOL. 6	44-60	15.50
NS 1.2:D 36/2/VOL. 7	61-67	22.00
NS 1.2:D 36/2/VOL. 8	68-75	12.75
NS 1.2:D 36/2/VOL. 9	76-84	14.25
NS 1.2:D 36/2/VOL. 10	85-97	15.00
NS 1.2:D 36/2/VOL. 11	98-108	20.65
NS 1.2:D 36/2/VOL. 12	109-119	20.15
NS 1.2:D 36/2/VOL. 13	120-134	28.00
NS 1.2:D 36/2/VOL. 14	135-144	11.50
NS 1.2:D 36/2/VOL. 15	146-154	17.65
NS 1.2:D 36/2/VOL. 16	155-163	14.00
NS 1.2:D 36/2/VOL. 17	164-171	14.70
NS 1.2:D 36/2/VOL. 18	172-182	18.30
NS 1.2:D 36/2/VOL. 19	183-193	16.45
NS 1.2:D 36/2/VOL. 20	194-202	17.25
NS 1.2:D 36/2/VOL. 21	203-210	15.45
NS 1.2:D 36/2/VOL. 22	211-218	18.55
NS 1.2:D 36/2/VOL. 23	219-230	19.50
NS 1.2:D 36/2/VOL. 24	231-238	19.20
NS 1.2:D 36/2/VOL. 25	239-249	14.15
NS 1.2:D 36/2/VOL. 26	250-258	20.15
NS 1.2:D 36/2/VOL. 27	259-263	15.55
NS 1.2:D 36/2/VOL. 28	264-274	18.65
NS 1.2:D 36/2/VOL. 29	275-284	19.35
NS 1.2:D 36/2/VOL. 31	290-302	17.40
NS 1.2:D 36/2/VOL. 32	303-313	16.90

*ADD 25% FOR FOREIGN POSTAGE HANDLING

Orders for Initial Reports should be sent to:

Assistant Public Printer
(Superintendent of Documents)
Government Printing Office
Washington, D.C. 20402

REMITTANCE MUST ACCOMPANY ORDERS.

FROM THE PLANNING COMMITTEE

Re-entry Cones

The supply of re-entry cones has become a crucial issue. The current supply was ordered prior to the modification of IPOD I from a three year into a four year program, and the concomitant inclusion of more ocean margin drilling in the first year of IPOD. The present supply of cones is one small and three maxi-cones. The initial budget for cones was submitted two years ago and is not due for re-submission until Spring 1976, which would not procure delivery until Leg 51 (October 1976). One solution to this problem to ensure a sufficient supply for legs 47-50 is that cones could be manufactured in one of the member nations of JOIDES as part of the payment in kind. The manufacturer's specifications will be supplied to the non-U.S. Planning Committee members by DSDP.

The new maxi-re-entry cone is stronger at the casing junction and also larger and buttressed so as to resist sinking into soft sediments. The small cones are also being re-designed along these lines to have the same top and flange, but will be lighter weight structures. The small cones are good for one or two re-entries and would be satisfactory for the passive margin sites, but the very deep ocean crustal sites will need the maxi-cones.

The original cost of the small cones was $12K, but they now cost $30-40K. The maxi-cones cost $60-70K. They are thus a major item on the budget.

Methods of observing the behaviour of the cones on the seabed are being looked into; this may be done by still or television cameras, or from a submersible.

The Planning Committee are preparing an estimate of the number of cones required for the first few legs of IPOD and shipboard co-chief scientists will be asked to make frugal use of cones and to request permission from DSDP before using the last cone on board.

XRD

CNEXO has generously offered to loan DSDP a portable XRD unit for use on board GLOMAR CHALLENGER. This will be put on board for a trial leg to test the feasibility of its shipboard use, probably during the passive margin legs.

Sedimentary Structures

The Sedimentary Petrology Panel recommend that information on sedimentary structures should be included in the Initial Reports. These data are usually on the core description sheets but not elsewhere. The Planning Committee recommend that the Sedimentary Petrology Panel be asked to formulate guidelines as to the method of dealing uniformly with these data.

Core Repositories

During the summer there is a peak demand for samples and visits to the repositories which creates a burden on the core repository staff. It is suggested that at a time when the samples requested can no longer be dispatched within two weeks of receipt of the request, that extra staff should be employed on an evening shift. This should deal adequately with the short term needs of the repositories, but it is also recognized that a longer term plan is also needed to cope with the future requirements of the core repositories.

The Ocean Crust Panel is concerned that the Atlantic repository is overcrowded until the new core laboratory at Lamont is completed, and request that adequate facilities are provided for the cores for legs 45-52. The panel also requests that the new core facility is equipped with binocular petrographic microscopes and a small reference library.

Another request from the Ocean Crust Panel is that approximately 20 cm of any major hard rock unit be stored in sea water so as to retain the initial character of the sample for velocity, density, etc. measurements.

INITIAL CORE DESCRIPTIONS PUBLICATION POLICY

There is a difference of opinion between hard and soft rock geologists on the question of optimum process time for the Initial Core Descriptions. The Ocean Crust Panel requests a two-part ICD with the hard rock portion produced ready for publication by the time the ship arrives in port. The sedimentologists and palaeontologists on the hand require additional time for shore-based work and prefer that the ICD is produced less rapidly.

The Ocean Crust Panel also request that publication should be open and that DSDP results can be published elsewhere before the Initial Reports are produced. They argue that this would not detract from the value of the Initial Reports. The rationale for closed publication is to ensure that the articles for the Initial Reports are completed. It was also felt that open publicaton would lead to a breakdown in shipboard teamwork.

After much deliberation the Planning Committee decided not to modify the present publication policy, but that legs 45 and 46 could be regarded as test legs to see whether it was possible to assemble the hard rock ICD data by the end of each leg.

SAMPLING POLICY

Sampling has been the topic of much recent discussion. It was earlier agreed that less sampling for non-shipboard work would take place on board, since in the past this had detracted from the amount of shipboard science accomplished.

The Ocean Crust Panel is also concerned that the hard rock cores may be overly sampled and have therefore recommended that each hard rock scientist on board takes no more than 100 hard rock samples and that these be taken

from intervals identified for shipboard initial study. The latter statement is aimed partly at allowing comparisons of sample-properties between the many laboratories that will be involved. This recommendation has been approved by the Planning and Executive Committees. The 100 samples may be redistributed at each shipboard scientist's discretion.

According to the Ocean Crust Panel plan, the Initial Core Description (ICD) would be produced very soon (~ 3 months) after the end of each leg, and immediately after this the samples should be made available to any other interested scientist. However, the samples should be available to view for sample requests to be submitted within the three month period.

Sampling and publication must also be closely linked to the policy for shipping the cores back from the ship. These may be shipped back at the end of each leg, or alternatively in the interests of economy, the cores from two or three legs may be collected until the core van is filled. This would cause a 4-5 month delay in the repositories receiving the cores and hence a similar hold-up in sampling. The Ocean Crust Panel are keen that the cores are shipped back at the end of each leg and that waiting periods are kept to a minimum.

Clearly the time allocated for ICD production, sample distribution policy, and core shipment policy are closely linked and require close co-ordination.

The present sample distribution policy for work for the ICD or Initial Reports is that the distribution is at the discretion of the co-chief scientists. Samples for work other than the Initial Reports are distributed under the jurisdiction of the DSDP Curator 12 months after the end of the leg which collected the cores. The only exceptions to this are for specific instances involving the analysis of ephemeral properties of the samples. There is an obligation for all work on the samples to be promptly published. Investigations not completed in time for inclusion in the Initial Report may not be sumitted to other journals until the Initial Report for which the work was intended is published.

In no instance is more than a quarter of the core to be distributed, and the archive half of the core will be kept intact. In the past palaeo-environment samples have been taken at different levels of the core for different analyses. It is now requested that a 5 cm long quarter-core be split so that both palaeo and lithogy analyses can be made from the same sample. A 5 cm sample should be taken at least once per core barrel. This has the approval of the Planning and Executive Committees.

SHIPBOARD SCIENTIFIC STAFFING

Leg 45 staffing has been determined by the DSDP Chief Scientist in the normal way. The Planning Committee, however, now advise on outline lists of shipboard personnel. Scientific parties were outlined for legs 46-48.

Since Leg 47 appears to have many separate objectives, it was decided to split this leg into two halves with an intermediate port call at Casablanca, where some of the scientific personnel would be changed.

Shipboard Scientific Party

Leg 45

W. Melson - Co-Chief Scientist
P. Rabinowitz - Co-Chief Scientist
A.L. Graham - Igneous Petrology
T. Fujii - Igneous Petrology
E. Prosser - Igneous Petrology
J. Natland - Igneous Petrology and editorial representative
B. Zolatarov - Igneous Petrology
H. Bougault - XRF Specialist
H. Johnson - Palaeomagnetics
J. Lawrence - Geochemistry
M. Rhodes - Geochemistry

Leg 46

The Co-Chief Scientists for this leg will be J.R. Heirtzler and L. Dmitriev; the remainder of the scientific party is not yet finalized.

PANEL RE-ORGANIZATION

Since membership of all JOIDES panels is subject to annual review, this opportunity was taken to examine both the panels and their membership.

Ocean Palaeoenvironment Panel

This panel has reached a nick point in its career on having completed the minisynthesis of palaeoenvironmental data from previous cores. This data synthesis takes the form of a series of maps covering all the oceans, and is accompanied by a short description. It was agreed that the resultant re-emphasis in outlook should be accompanied by a re-organization in panel membership. Accordingly, the membership is now as listed at the back of this journal. The new mandate for this panel appeared in the 1975/2 edition of the JOIDES Journal.

Sedimentary Petrology and Physical Properties Panel

A considerable re-roganization in membership of this panel also took place, since many of the members had already served for two years on the panel. Ross Heath has now taken over the Chairmanship from George Keller, who will still remain a member of this panel.

Stratigraphic Correlations Panel

Since the Palaeoenvironment Panel now supervise the palaeontological interests, it was felt that there was a need for a different type of stratigraphy panel, and consequently a new panel has been inaugurated. Dr. R.H. Benson will be Chairman of this panel. The full membership of this panel is not yet final and will appear in the next edition of JOIDES Journal. It is intended that this panel should meet once a year.

Mandate for the Stratigraphic Correlation Panel

This tentative mandate has been agreed upon by the Planning Committee, but will be finally approved by the panel members themselves.

1. Keep under review (and suggest means of improving) current capabilities of stratigraphic correlation between sequences deposited in the open ocean, and on the continental shelf and slope.

2. Similarly keep under review the standard schemes of zonation based on the various kinds of microfossils, and suggest means of improving them and their intercorrelation.

3. Suggest means of improving the capability of performing stratigraphic correlation between sequences accumulated in low, middle and high latitudes.

4. Suggest means of increasing the uniformity of taxonomic nomenclature in DSDP publications (as far as practicable).

5. Keep under review the quality of DSDP data on stratigraphy, paleontology and correlation, and suggest means of improving them when necessary. In this connection, attempt to develop a means for effective review of Initial Report chapters on these subjects.

6. Review the need for paleontologic and stratigraphic shore laboratory work during IPOD, and suggest means for organizing it.

7. Determine whether significant gaps exist in paleontological and other aspects IPOD stratigraphy, and, if there are any, suggest means for filling them.

8. When requested by the DSDP curator, provide guidance by reviewing problematic requests for samples for stratigraphic or paleontologic studies.

9. Suggest instructions which DSDP should transmit to shipboard participants, pertaining to stratigraphy.

10. Keep under review the relation of oceanic biostratigraphy and lithostratigraphy to chronostratigraphy, and suggest means for ensuring that the best information in this field is available to contributors to the Initial Reports.

11. Provide the JOIDES Paleoenvironmental Panel and the Planning Committee with suggestions regarding paleontologists and stratigraphers to participate in shipboard and shore-based work leading to the Initial Reports, and to any later syntheses.

Palaeontology and Biostratigraphy Panel

With the inauguration of the Stratigraphic Correlations Panel, this panel became superfluous and it was therefore agreed to disband the P & B Panel. The members of this group are thanked for their work and the valuable contribution they have made to JOIDES which is much appreciated.

Atlantic Panel

With the termination of Leg 44, the task of the Atlantic Panel has been accomplished and thus this panel also is now disbanded. Again, thanks to the members for their major contribution to the DSDP drilling phases.

REPORT FROM DSDP

Legs 43 and 44

Both these legs experienced both major and minor breakdowns, resulting in loss of drilling time (especially Leg 44). Some of these problems could not have been foreseen, and others were due to the ship's inventory having been run down. This will be ameliorated for the IPOD program however.

The pressure core barrel was tested for the second time during Leg 44 and was found not to function well in indurated sediments.

Engineering Test Cruise (Leg 44a)

The test cruise will extend from 8th until 28th November where deep drilling will be done near Site 391c in the western North Atlantic. The main objective will be to test the new design of casing and re-entry cones. One maxi cone will be used for re-entry at this site. The theoretical maximum basement penetration is 500 m and if drilling is proceeding satisfactorily and maximum has not been reached, then the test cruise may be extended for up to one week. Thus, the starting data for each leg in the drilling schedule is tentative.

New Instruments Aboard GLOMAR CHALLENGER

A Schonstedt spinner magnetometer with an a.c. washer has now been installed on board in a corner of the palaeontology laboratory. An X-ray Fluorescence instrument, on loan from CNEXO, is also now installed in the geochemistry laboratory.

Environmental Consciousness

Environmentalists will be glad to hear that cardboard, instead of plastic, coffee cups are now on board GLOMAR CHALLENGER and that no waste is jettisoned overboard. A waste compactor has been installed and all solid waste is now compressed and kept until port is reached.

OCEAN CRUST PANEL

This panel met on September 9-11, 1975 at Lamont-Doherty Geological Observatory.

Downhole Logging

The panel stresses the importance of downhole logging, particularly on crustal re-entry sites, and notes that the overall scientific return from basement studies may be diminished several fold without a comprehensive logging effort. As there is no formal logging program for Leg 45, the panel urges that a back-up velocity experiment similar to that used by Ewing on CALDRILL be implemented.

Lamont Core Repository

A new building is under construction which is designed to provide storage for some DSDP cores now in commercial refrigerated storage, and the IPOD Atlantic cores. A working area will be provided, intended for the use of visiting scientists working on the samples. The Ocean Crust Panel request that this working area be equipped with a binocular petrographic microscope, stand binocular microscope and a small library, containing Initial Reports, sample distribution records, and a DSDP bibliography.

The opinion is expressed by the Ocean Crust Panel that the demonstration of cores to visiting scientists should take priority over all other curatorial duties at repositories, other than the unpacking and storage of cores. All visitors are requested to make every attempt to schedule their visits through Mr. Dennis Bohrer at Scripps and Mr. John Fiske at Lamont, giving adequate notice of their visit.

Shipboard Treatment of Samples

Certain properties of samples are more reliably measured on cores that have not been allowed to dry out and have been kept cool. The Ocean Crust Panel thus recommends that about 20 cm of core from each homogeneous basement unit of 10 or more meters in length be stored in sea water and kept cool.

The volatile content in some rocks, especially "exploding" basalts should be preserved as much as possible in a mildly pressurized container. As a start in this direction, the panel recommend that a supply of sealable teflon containers be placed on board.

Site Survey Data

Members of the Ocean Crust Panel agreed to an ad hoc meeting on 4 November at WHOI to examine the site survey data for the Atlantic crustal sites. They also recommend that Site Survey Management prepare summaries of the data available for each site and that this should eventually be distributed in condensed form to the Ocean Crust Panel for planning purposes.

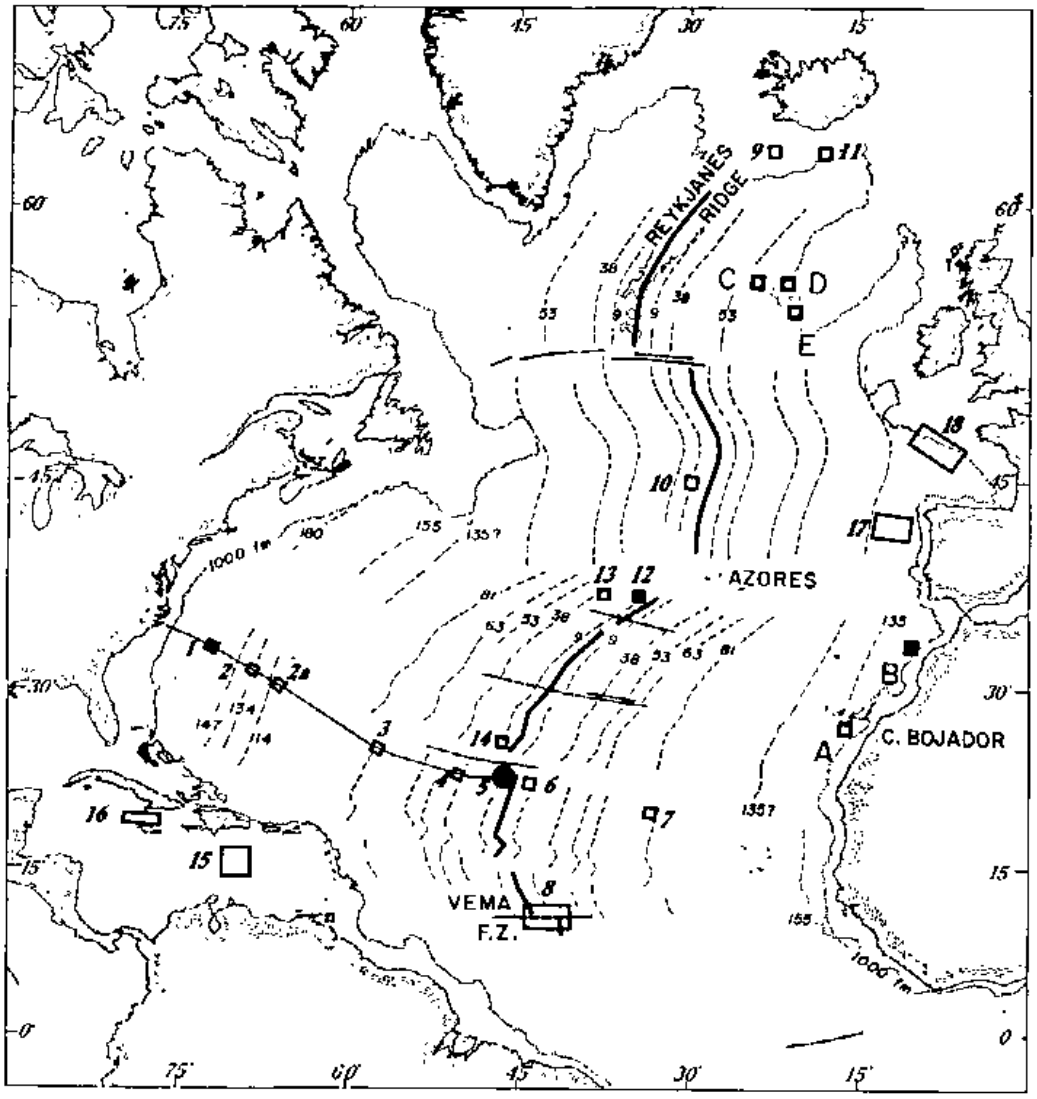


Figure 1. IPOD Atlantic Drilling Sites (11/75). Small open rectangles indicate single bit sites, black rectangles deep sites and black circles very deep sites. The larger rectangles show areas of several sites not yet precisely determined.

Legs 45 and 46

The main objective of these legs is deep penetration into oceanic crust. The site survey data at site 5 was examined and a sequence of priority locations established, so that should deep penetration not be successful at one site, the next would be chosen and so on. The information from site 6 was not at that time available, but will be prioritized on 4 November.

The priorities established at this time were:

1. Site 5 (i) North Pond (ca 22°46'N, 46°10'W) (see site descriptions on page 42)
   (ii) West Pond (ca 22°40'N, 46°25'W)
   (iii) Northwest Pond
2. Site 6 (to be decided after meeting on 4 November 1975)
3. Site 3
4. Site 4

After long discussion it was agreed that the prime site should be sited on a peak or trough of a magnetic anomaly, so as to avoid any transition zone and to keep the situation as simple as possible for the interpretation of magnetic polarities and intensities of the core sample.

Specific plans for Leg 46 will depend upon the results of Leg 45. If a site suitable for deep penetration is found during Leg 45, and if it is possible to leave the hole open, then Leg 46 will continue drilling in the hole. In case this does not prove to be possible, alternative plans will be considered.

Site 7

The priorities for drilling on this site will also be reviewed at the December meeting.

Longitudinal Traverse

The Ocean Crust Panel recommend that sites 9, 11, 10 and 13 (Fig. 1) are drilled on Leg 50 and also that site 12 is commenced. Then, assuming that site 12 can be successfully re-entered, drilling should continue on Leg 51 to reach deep penetration. Sites 4, 6 and 7, originally scheduled for Leg 46, would then either be deleted or picked up on another leg. In view of the large number of sites to be fitted into this transect during a single leg, it is felt that site 14 should have lower priority.

Pacific Drilling Plans

The panel sees the need to confirm these plans as far as possible in order that the site surveying can go ahead. The recommendations of the

Joint Ocean Crust/Active Margin ad hoc meeting were essentially approved regarding the Mariana transect and the Shikoku Basin site. An additional site was proposed for the South Philippine Sea transect, to sample part of the submerged part of the Marianas islands - probably between the islands of Pagan and Alamagan in about 3000 m of water.

SP1 - a site on old Pacific crust just seaward of the Mariana Trench (Fig. 2) and SP8, in the West Philippine Basin, should be comprehensively surveyed in the manner of Atlantic site 5 and SP4, a re-entry site in the Mariana Trough, should have a good refraction survey. The Ocean Crust Panel also support the Active Margin Panel's recommendation for a multi-channel seismic reflection survey along the whole of this transect. Many of these sites require a drill string longer than that anticipated for GLOMAR CHALLENGER, and these sites will become part of the IPOD II program; the question of whether SP9 and SP10 should be part of Phase I is to be re-considered. The exact location of NP2 in the Shikoku Basin has also to be decided after further study of available data. The Ocean Crust Panel request that Site Survey Management assemble the existing data for its evaluation.

Pac 5 and 6 (Fig. 3)

It had been suggested that these sites could be moved further north to an area where the magnetic anomalies are better defined, and also whence better palaeomagnetic samples could be obtained with a higher inclination.

The panel consider that a more northerly location for these sites would be off the flow line projected from the Gulf of California, and also in a region of lower spreading rate. Weather conditions would also be worse and thus the panel recommends that these sites remain in their original locations.

Juan de Fuca Ridge

This area was originally outlined as an alternative to the Gulf of California. However, the panel have expressed a strong interest in making this an additional site to the Gulf of California. Here may be the only location to drill into "zero age" crust.

Galapagos Spreading Center

Considerable interest is expressed in this area on account of the evidence for hydrothermal circulation, anomalously strong magnetic intensities and the juxtaposition of normal and high Fe-Ti basalts. This region will be discussed at the next meeting.

White Paper

The ocean crust drilling objectives during IPOD are to be formally outlined in a document to be completed by December.

Computer Data Files

The Ocean Crust Panel continues to recommend that all hard rock data be stored on magnetic tape in a retrievable format. Two of the panel members have agreed to work with DSDP on this matter.

PACIFIC CRUSTAL DRILLING PLANS

For the sake of completeness the objectives of these sites are again listed.

Sites 1-3: Recent ocean crust: Two (possibly alternative) sites are proposed; the southern end of the Gulf of California, north of the Tamayo Fracture Zone, or on the Juan de Fuca Ridge crest. The requisites for this site are adequate sediment for spudding into as young aged crust as possible. This site should provide information on water circulation within the oceanic crust, thermal gradients and provide unweathered samples for geochemical studies as well as allowing investigation of the structure and distribution of pillow lavas and dykes. The presence of sediment at the ridge-crest causes an intermixing of lava and sediment, making these sites ipso facto anomalous. However, the value of obtaining very young samples is considered to outweigh this disadvantage. There is some evidence that lava/sediment sequences are the most favorable for deep drilling conditions and this may prove to be an extremely successful site and ideal for downhole experiments and logging.

Sites 4a and b: Fast-spreading transect, deep sites on 2 & 5 m.y. old crust: After consideration of the fastest Pacific spreading area near 20°S, this was rejected on the grounds of lack of sediment and remoteness. As an alternative the panel considered the proposal of Dorman et al. to drill near the Siqueiros Fracture Zone. This was favored, despite poor magnetic definition beyond 5 m.y., because sediments are thought to exist in ponds within 10-20 km of the ridge axis, and seismic refraction data indicate a low velocity zone (magma chamber) centered beneath the median zone. The spreading rate here is approximately 6 cm yr^{-1} over the last 10 m.y., three times that of the Atlantic and adeuate to compare geochemical evolution of fast and slow spreading ridges. This will be one of the high priority sites for very deep penetration.

Sites 5 and 6: Transect near 25°N: Site 5, a shallow hole on anomaly 10 and a deep site on anomaly 32 are proposed on a transect south of the Molokai Fracture Zone. This will be in line with the site in the Gulf of California and also the site 6 aged 75 m.y. will tie in with sites of the same age in the Atlantic. The spreading rate was high during the formation of these older anomalies and so will continue the fast spreading transect near the Siqueiros Fracture Zone, although not on the same flowline.

Sites 7-10: Oldest Pacific crust and Jurassic quiet zone: Sampling the oldest known ocean crust will help complete the investigation of the geochemical evolution through time. Site 7 is on M1 south of the Kurile Trench and will date this important magnetic anomaly and also tie in with active margin sites in the Sea of Okhotsk. The Nauru Basin is one of the few places shallow enough to enable sampling of the Jurassic sea floor and also where chert-free locations exist, here Site 8 is proposed to be on anomaly M22, the oldest identifiable anomaly, Site 9 will be a shallow hole in the magnetic "decay envelope" as the anomalies merge into the Jurassic quiet zone, the location for site 10.

AD HOC OCEAN CRUST PANEL MEETING

Held at Woods Hole on 4 November 1975.

The purpose of this meeting was to develop a drilling plan for Leg 45 and a tentative plan for Leg 46, having on hand the site survey data from sites 5 and 6.

Site 6

The IPOD/WHOI data now supplement the bathymetric and magnetic data collected earlier this summer aboard the AKADEMIC KURCHATOV. Initial sonobuoy results showed velocity layers of 3.5, 4.7, 6.9 and 8.0 km s^{-1} with respective thicknesses of 0.4, 1.5 and 4.0 km. A sediment pond coincides with magnetic anomaly 5, whereas North Pond, at site 5, lies in the transition zone near anomaly 4. It was accordingly decided that site 6 should be the prime site for deep penetration and the goal for Leg 45.

Revised Leg 45 Drilling Plan

1. Three pilot holes will be drilled in the sediment pond at site 6 in search of a potential very deep site.

2. If the deep hole is abandoned because drilling becomes difficult, the same procedure will be followed in North Pond at site 5, if time permits.

3. No deep holes should be attempted within 8-10 days of port, and this time used instead for shallow holes.

Leg 46

These plans will finally be reviewed at an ad hoc meeting on 19 January 1976 at WHOI by which time Leg 45 will be almost complete. The co-chief scientists of Leg 45 are encouraged to communicate frequently so that a drilling strategy for Leg 46 can be planned.

An integrated velocity measurement and downhole temperature measurement will be attempted on Legs 45 and 46, although the decision by NSF is still awaited as to whether the downhole logging program proper will be funded. R/V KNORR will rendezvous with the GLOMAR CHALLENGER during Leg 46 and do the explosive shooting for the oblique seismic experiment.

REPORT FROM THE ACTIVE MARGIN PANEL

This panel met at La Jolla on 12-15 August 1975.

The drilling objectives were redefined and six regions of interest were proposed (Figs. 2 & 3):

The Middle America Trench
Kurile – Japan
Philippine Sea
Tonga-Fiji Trench
Peru Trench
Antilles Trench

Objectives

The basic questions that might be answered by a drilling program were enumerated: a) Trenches: the question of whether the sediments on the downgoing slab are offscraped and thrust against the adjacent margin or whether they are dragged beneath it with the subducting plate will be investigated. It may also be possible that blocks of oceanic crust become incorporated into the inner trench wall (accretionary margins) or that tectonic removal of continental or oceanic crust by the descending slab occurs (consumptive margins). Four morphological zones of investigation were listed: the rise seawards of the trench, the trench proper, the zone of imbricate underthrusting beneath the inner wall, and the mid-upper slope of the inner trench wall. These may be underlain by thick masses of sedimentary rock (e.g. Middle America and Japan trenches), or underlain by thin sediments and basic to ultrabasic igneous rocks (e.g. Peru-Chile, North Middle America trenches).

b) Marginal Basins: Various hypotheses for the origin of these areas exist:

1. Entrapment of old Pacific sea floor, e.g. W. Philippine Sea, Bering Sea, Sea of Okhotsk.

2. Sea-floor spreading within the marginal basin itself, e.g. E. Philippine Sea, Sea of Japan, Andaman Sea.

3. Subsidence of continental or quazi-continental crust and subsequent oceanization, e.g. Seas of Japan and Okhotsk, S. China Sea, Sulu-Celebes Seas.

4. Rejuvenation of the sea floor by intense volcanism, e.g. Philippine Sea.

5. Any combination of these mechanism.

1. Middle America Trench

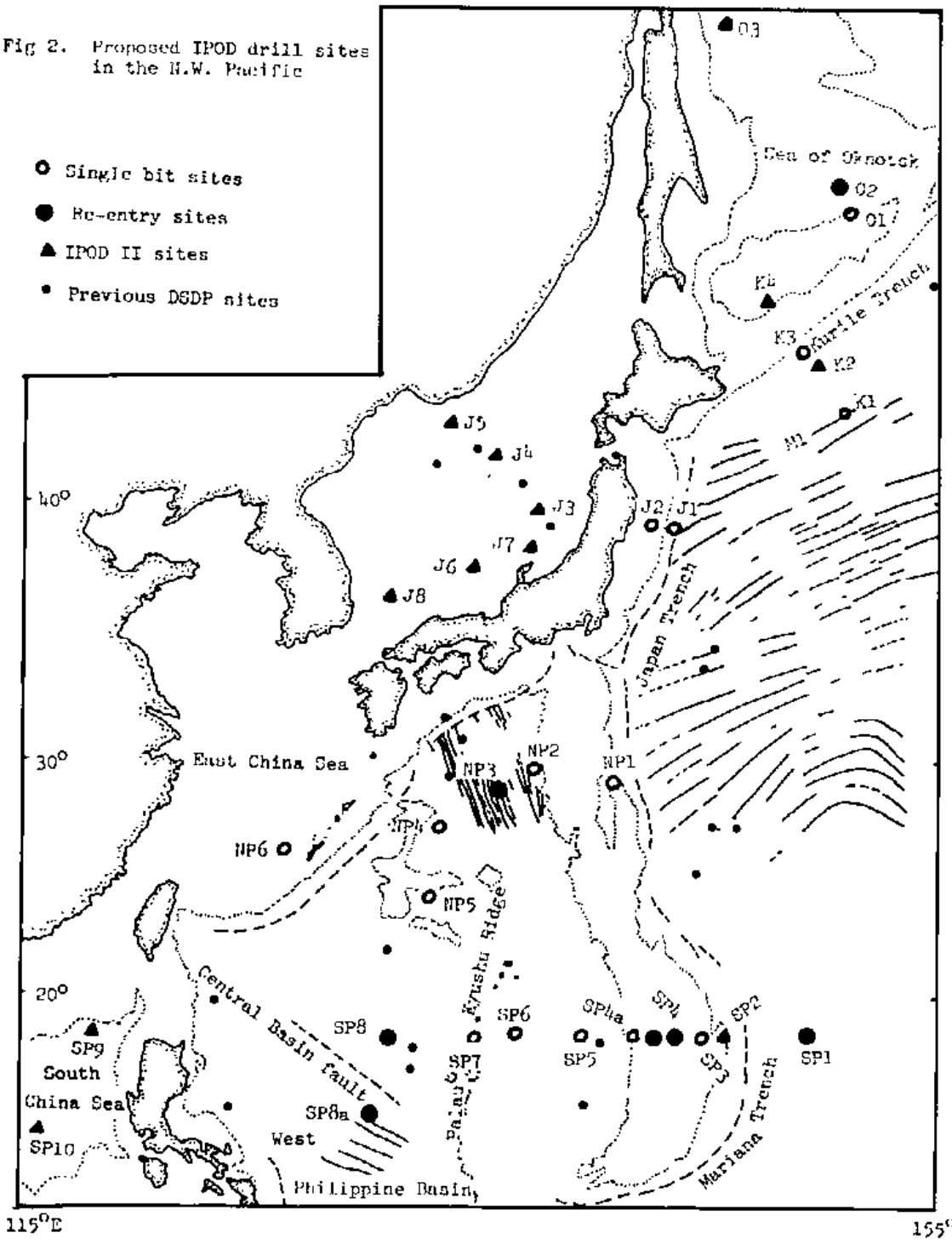
Two series of holes are proposed: off Guatemala (three re-entry holes) near 12°30'N in what is considered to be an accretionary trench, and off Mexico (two single bit holes) near 16°N, where granite has been dredged from the trench wall and which is thought to be a consumptive trench. The panel is concerned that whereas numerous data exist on the shelf area, very little information is available downslope and seaward of the trench, particularly in the area off Mexico.

2. Kurile-Japan Transects: (Sites J1-J8, K1-K4, O1-O3, Fig. 2).

(a) Sea of Okhotsk (Sites O1-O3)

This transect is designed to provide insight into the formation of marginal basins in water depths of 1000-1500 m. The Kurile island arc is probably no older than Upper Cretaceous and its history of evolution and deformation may be investigated. Site O1 near the base of the Academy of Sciences Rise will be a single bit hole, O2 on the upper flank of the same rise will involve re-entry and O3 in the Derugina Basin will be part of the IPOD II program.

Fig 2. Proposed IPOD drill sites in the N.W. Pacific



(b) Kurile Transect (Sites K1-K4)

The Kurile Trench is an accretionary type like the Middle America Trench, but in an island arc situation. Site K1 (site 7 in Fig. 3) is on magnetic anomaly M1 and is also of interest to the Ocean Crust Panel. This will be a single bit hole. Site K2, an IPOD II site, and K3 (a single bit site), are located on the inner trench wall of the Kurile outer arc. K4, also an IPOD II site, will be a deep hole in the central part of the Western Kurile Basin. The panel recommend that site surveys in this area include two long multi-channel seismic reflection lines positioned to tie the two transects together, seismic refraction surveys should provide the three-dimensional crustal structure in the Kurile and Derugina Basin.

(c) Japan Sea Transect (Sites J1-J8)

This transect commences on the inner wall of the Japan Trench, crosses the Japanese arc and includes six sites in the Sea of Japan. Thus, this considerably older arc (from Palaeozoic) can be compared to that of the younger Kurile transect. The sites east of the islands are close to the S.I.P.M. multi-channel line. J1, a single bit site, is to penetrate the unconformity above the diffracting layer on the midslope of the inner trench wall. J2, a single bit hole on the trench slope, should provide data on the tectonic history since the Palaeogene. Sites J3-J8 are all in the Japan Sea, where heat flow and magnetic lineations suggest that the region may have been formed through back arc spreading, perhaps in successive episodes. Three holes (J3-J5, all IPOD II) are proposed across the deeper part of the Japan Basin normal to the strike of the magnetic lineations. Sites J6-J8 (all IPOD II sites) will be located in the Yamato, Hakusane and Tsushima basins.

3. Philippine Sea Transects

Two major transects are proposed, one near 25°N from the Iwo Jima Ridge to the Okinawa Trough, and a second near 19°N from the Pacific plate across the West Philippine Basin into the South China Sea.

(a) N. Philippine Transect (Sites NP1-NP6)

The easternmost site NP1 is a single bit site on the northern edge of the Bonin Trough where the sedimentary sequence and the nature of the basement may clarify the history of this region and relate it to events recorded on the Bonin Islands. NP2, single bit, and NP3, re-entry, are located on an unidentified anomaly and on the supposed spreading axis in eastern and central Shikoku Basin, respectively. Magnetic anomalies have been tentatively identified as Neogene in the western flank, but are not well defined on the eastern flank, and thus this site may solve the question of symmetry of spreading or perhaps reveal a history of subsequent fragmentation of a linear pattern. NP3 will become a re-entry site if the spreading appears to be symmetric.

Site NP4 (single bit) in the North Daito Basin in 5200 m of water, will help to elucidate the history of this and neighboring ridges and basins that may be ancient island arcs and back arc basins.

Site NP5 is a single bit site located between the Daito and Oki-Daito Ridges in the south Daito Basin in 5500 m of water. The basin has a free-air gravity anomaly of 130 mgal. The drilling objectives are similar to that of site NP4 and should also link results from DSDP sites 294 and 295.

NP6 is a single bit site in the Okinawa Trough, which has a very high heat flow and is interpreted as the early stage of a developing marginal sea. The main objective would be the determination of the nature of the basement and rifting history of this area.

Site survey requirements would be a multi-channel line linking sites NP1 to NP5, and on to site 295. Also, a line across the Okinawa Trough and the Ryuku Trench if possible.

(b) S. Philippine Transect (Sites SP1-SP10)

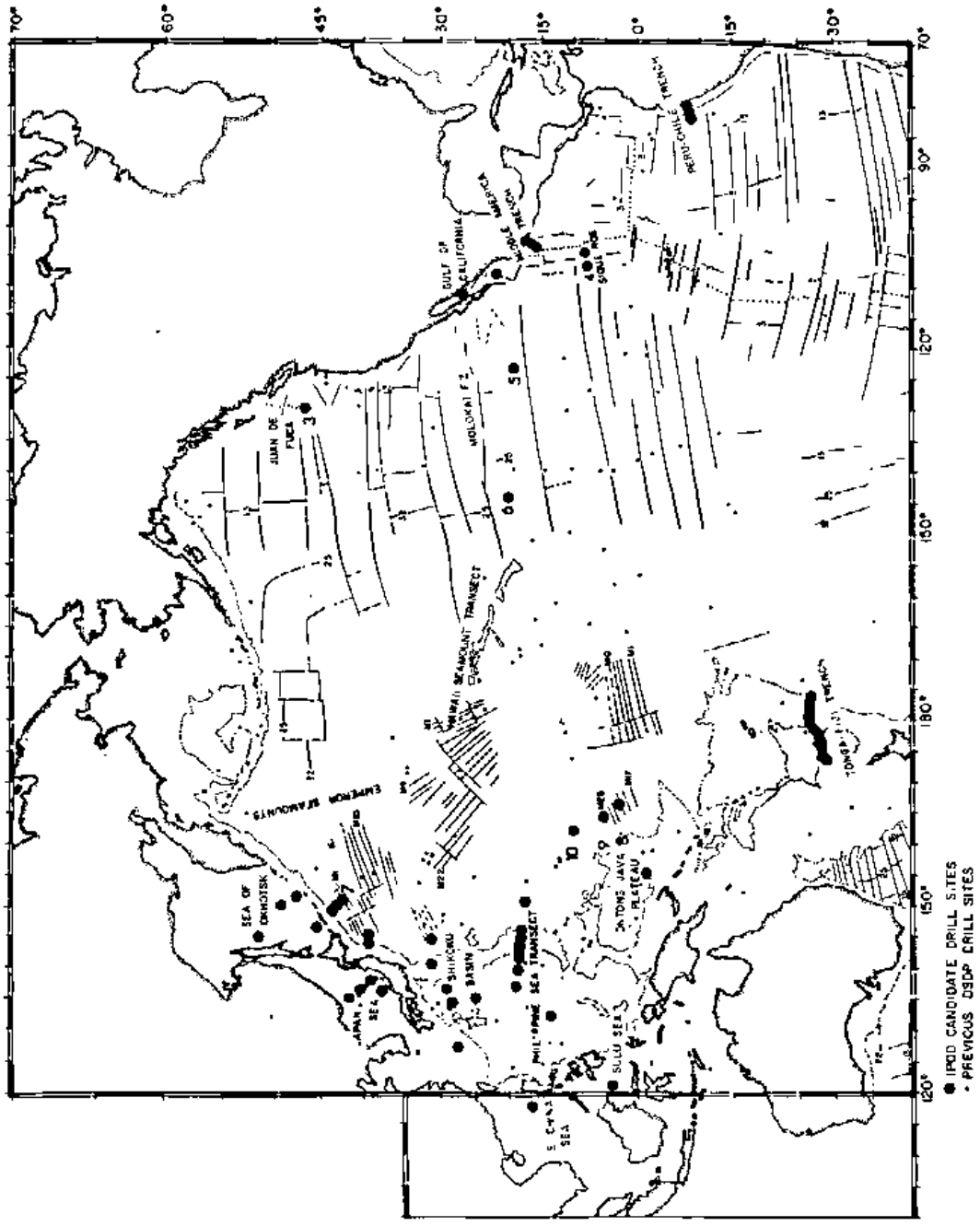
This transect is of interest to both the Active Margin and the Ocean Crust panels. Site SP1 will be a re-entry site on the Pacific Plate in the Jurassic quiet magnetic zone. SP2 is an IPOD II site to sample the accretionary processes in the inner wall of the Mariana Trench.

Site SP3 is also an IPOD II site in the Mariana trench-arc gap to investigate the formation of this feature. Sites SP4a and b are alternative re-entry sites east and west of the Mariana Trough. The relationship between this trough and the Parece Vela Basin to the West Philippine Sea is disputed on the grounds of different depths and crustal thicknesses. The W. Parece Vela Basin and the W. Philippine Sea have a thin crustal layer 2A, making the sampling of Layer 2B a very feasible proposition. The Ocean Crust Panel recommend an additional site in this transect to sample the undersea part of the Marianas Islands themselves, probably between Pagan and Alamagan Islands in about 3000 m of water. This should indicate any chemical and structural similarity between the "island" parts of island arcs and the arc ridge.

Site SP5 will be a single bit site on the western flank of the remanent arc as close to the axis of the arc as sediment cover will allow. Sites SP6a and b are alternative single bit sites in the east or west Parece Vela Basin to sample older marginal basin crust. SP7 is a single bit site on the Palau-Kyushu Ridge in order to compare this with sites SP5 and the Mariana Arc. Sites SP8a or b are designed to sample the floor of the West Philippine Sea where Layer 2A is thin or absent and Layers 2B and 3 are accessible, to gain evidence for the age of this marginal basin (previous holes possibly bottomed in lava flows rather than true basement). Sites SP9 and SP10 will be located in the South China Sea, to be drilled during IPOD II to investigate the age and petrology of this little understood sea.

The Ocean Crust Panel is interested in most of these sites, but considers that sites SP2 and SP3 to be of Active Margin interest only.

Site Survey requirements include a multi-channel seismic line along the length of this traverse. The Ocean Crust Panel also request seismic refraction surveys across sites SP1 and SP8.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EMPEROR SEAMOUNTS
SEA OF OKHOTSK
SHIKOKU BASIN
PHILIPPINE SEA TRANSECT
SULU SEA
OGASAWARA PLATEAU
TONGA TRENCH
PERU-CHILE TRENCH
● IPOD CANDIDATE DRILL SITES
• PREVIOUS DSDP DRILL SITES

Figure 3

4. Tonga-Fiji Transect

This is one of the best examples of an active, non-accretionary trench arc system. A S.I.P.M. multi-channel reflection profile suggests that the lower slopes of the inner wall are underlain by igneous rocks with possibly only thin sediment cover. Tectonic events, including downfaulting of the frontal arc, westward migration of structural deformation, igneous intrusions and related volcanism into the back arc region, are well documented by work from the Mobil Oil Company. The Lau and Fiji basins south are typical examples of inter-arc basins and intra-oceanic marginal seas divided by an intervening remanent arc. The Lau Basin is young and characterized by high heat flow and magnetic symmetry indicating basinal extension. The South Fiji Basin is also thought to be an extensional basin due to the existence of N-S trending linear magnetic anomalies. Eleven drill sites have been proposed with the following objectives:

T1 (single bit) on the Pacific Plate to determine the composition of the crust as source material for the island-arc volcanism. T2 (a single bit site for IPOD II) in 9000 m of water, and T3, a single bit site on the inner trench wall, to investigate hard rock deformation and possibly also to determine the factors responsible for this being an incipient zone of weakness predating subduction. Site T4, a single bit hole on the 4000 m shelf, to provide information on any unusual properties on the upper inner slope crust. Site T5 (IPOD II) on the Tonga Ridge along the axis of the Tonga platform, positioned to avoid any post formational igneous activity, is to determine the deformational history since the uplift of the frontal arc and to compare the igneous basement (oceanic?) with that of the frontal arc and the inner trench wall. Site T6, a re-entry site on the volcanic basement in the Lau Basin, will determine the nature of the recent inter-arc basin spreading. Site T7, a single bit site, will be on the stepped eastern flank of the Lau Ridge to provide information of the process of uplift of the ridge, initiation of rifting and the development of the inter-arc basin. Site T8 will be a single bit site on the western side of the Lau Terrace to determine whether or not the west side of the Lau Ridge is also a rifted margin and, together with T9 (re-entry) and DSDP site 205, to investigate the symmetric or otherwise extension of the basin. At T9, sonobuoy data reveal a shallow mantle at a depth of 3.7 km, and this may be the former spreading center. Site T10 (single bit) will lie in the west margin of the South Fiji Basin to investigate the spreading history of this area. T11 (single bit) will be on the Three Kings Rise, which may be either a remanent arc or, alternatively, be composed of metamorphics related to the rocks of New Caledonia or New Zealand.

5. Peru Trench

Three 24-channel seismic profiles are available in this region, where the basaltic layer is broken into a series of imbricate thrust sheets extending at least 25 km beneath the lower continental slope. The continental slope is underlain by Paleozoic metamorphics and thus this trench is intermediate between accretionary and consumptive. Drilling is rationalized here by the strong contrast between continental and oceanic lithologies, apparent convergence along the same latitude since the late Eocene, and the availability of oil company data in the region, including drilling on the shelf.

Four sites are proposed: P1, a single bit site on a basalt ridge in the trench axis in 5793 m of water. The sediments in the toe of the inner wall will be sampled at site P2 (re-entry) in 5943 m of water, and imbricated basement is anticipated at site P3 (re-entry) on the inner trench wall. Site P4 is a single bit site to sample the upper slope unconformity of recent sediments over deformed accreted sediments or older metamorphics.

6. Antilles Trench

Seismic reflection studies indicate oceanic basement plunging beneath low velocity sediments at the foot of the Barbados Ridge. If these sediments are pelagic, the trench would be considered accretionary. A single hole, A1 (re-entry), would be located at the lower landward slope of the Antilles Trench. This could be drilled during Leg 65.

(As with most panels, the ideas exceed the time to execute them and the Tonga-Fiji and Peru trench transects have been assigned second priority.)

FROM THE PASSIVE MARGIN PANEL

Drilling recommendations for Legs 47 and 48

The panel met on 27-29 September (jointly with the Ocean Palaeoenvironment Panel on the 27th). The drilling objectives were reviewed and a logistic drilling program formulated.

The objectives are: to make facies comparisons with the object of investigating vertical tectonics and related transgressions and regressions, to study diagenesis of sediments, to locate the ocean-continent boundary, to investigate the vertical tectonics associated with initial rifting and the evolution of rifted margins, to study the origin of buried basement ridges, to investigate carbonate barriers and palaeoenvironments, to relate unconformities and hiatuses with episodes in sea-floor spreading, to sample the oldest sediments related to early rifting and assess the relationship between early volcanism, subsidence, sedimentation, to investigate evaporites and their conditions of formation and the basement beneath them, the various structures of passive ocean margins and the origin and decomposition of gas hydrates.

Caribbean Drilling

This region is of interest to both the Ocean Crust and Passive Margin panels. A working group of the Passive Margin Panel interested in this area met during 25-26 September 1975 at L-DGO; the Ocean Crust Panel have yet to discuss this area. The working group, however, proposed four sites in the Caribbean:

1. A re-entry site in the Venezuela Basin near 14-16°N, 73-66°W in water depth of 4-5 km. The scientific objectives of this site are to investigate the origin of the Caribbean crust and its age; it may transpire to be older than upper Cretaceous. Site Survey requirements demand good seismic refraction and reflection coverage.

2. A single bit hole in the Colombian Basin on the abyssal plain between the Beata Ridge and the Nicaragua Rise in 4 km of water. The objectives are to investigate the nature and age of the crust and to compare it with that of the Venezuela Basin and the Pacific.

3. A choice of three sites are proposed on the Barbados Ridge, one of which would require re-entry. The site chosen would investigate the nature and age of the magnetic basement in an imbricate fold south of Barbados, or the structure of the imbricated sediments at the front of the fold belts, or alternatively, the age and the nature of the sediments and the oceanic basement near the front of the fold belt.

4. A single bit site in the Grenada Trough near 62-63°N, 13-14°W in a water depth of 3 km with the objective of investigating the age, nature, and origin of the basement of the Grenada Trough and its relationship with the history of the Caribbean island arc.

Loran C

The Passive Margin Panel request that a continuous navigation system is put on board GLOMAR CHALLENGER as a back-up to the satellite system. On Leg 47 it would also be advantageous to have a Decca set since most of that leg will be spent in a good reception area for this sytem.

Re-entry Cones

This panel is most anxious that there will be a sufficient supply of re-entry cones for Legs 47-49. A minimum requirement is one maxi-cone for Leg 47a, and a small cone each for legs 48 and 49. More should be available if at all possible.

Leg 47a Plans

This leg will now commence from Las Palmas, as this will add 3 days to the leg without detracting time from Leg 46. Both the Palaeoenvironment Panel and Passive Margin Panel request that part of this leg be spent north of the Canaries. Accordingly, two areas of interest off N.W. Africa have been chosen:

1. Cape Bojador - a single bit site is proposed near 26°35'N, 15°28'W in 2900 m of water to investigate a "regressive" margin. A comparison of the sediments should throw light on the vertical tectonic history of the region, the origin of the unconformities, palaeoproductivity and the relationship of this area with Tethys during the Mesozoic.

The hole will complement sites 367 and 369 in this area, filling in the gap between deep sea and shelf facies. There are sites near canyons where stratigraphic closures no longer exist and should thus be safe to drill. A site on the Mazagan marginal plateau off Morocco is an alternative site.

2. Moroccan Basin - a multiple re-entry site near 32°50'n, 10°48'W is proposed, hopefully to penetrate the entire 2½ km of sediment thickness and to sample the pre-Oxfordian sediments for the first time in the North Atlantic. This site should also reveal information on the restricted environments during initial opening of the Atlantic, a Neogene palaeoenvironment section and further recovery of Tethyan pelagic carbonates. Site 370, where the upper 1100 m were cored, is located nearby, thus it will not be necessary to re-core this upper section.

Leg 47b

3. Galicia Bank - three sites are proposed on this subsided continental mass off N.W. Portugal. This margin is a typical "starved" margin from which Mesozoic sediments can be sampled beneath the minimum of Tertiary cover. One hole will be located on the carbonate platform itself to investigate its subsidence history. The second site, located on the upper side of a half graben on the western or southern edge of the bank, will hopefully reveal information on the early rifting history of this area. The third site will be located at the foot of the slope on the Iberian abyssal plain in a location where the basement can be reached and the oldest sediments dated. From this we can learn the age of separation of the Atlantic continents at this latitude.

All three of these sites are ostensibly single bit sites, but should indurated sediments be encountered, then re-entry may be required.

Leg 48

4. N. Biscay Margin - three single bit sites are planned in the region between 48°30'N and 46°30'N and 6°-12°W, each to penetrate approximately 800 m. The objectives of drilling here would be to compare shelf, slope and rise facies, the history of subsidence of this area in relation to the history of opening in the Atlantic and Bay of Biscay.

5. Rockall Plateau - three single bit holes are planned at the S.W. margin of Rockall Bank. This is the locus of three different phases of rifting in Rockall Trough possibly during the Lower Cretaceous, the opening of the N. Atlantic at approximately 80 m.y. and the separation of Rockall and Greenland at 60 m.y. The history of subsidence associated with these 3 separate opening phases will be examined together with palaeoceanographic and palaeoenvironment studies. A complete carbonate record through the entire Tertiary, and possibly across the Cretaceous-Tertiary boundary, should be available in this region.

The sites will be located at approximately 55°30'N, 25°40'W,; 55°10'N, 23°00'W and 55°30'N, 22°00'W in water depths of 1.6-3.3 km.

NORWEGIAN SEA

Leg 49

An ad hoc working group on the Norwegian Sea met at L-DGO during 30 September to 1 October 1975. This group recommends seven holes to be

drilled in the Norwegian Sea. The advantages of drilling in the Norwegian Sea are that this is a young area which has not yet subsided as deeply as other parts of the ocean. Basalts, presumably related to initial rifting, can easily be reached on the Vøring Plateau.

1. A re-entry site on the Outer Vøring Plateau 200 nm offshore, near 67°N, 3°E, in 1350 m of water where there is 1200-1500 m of sediment. Multi-channel seismic profiles show layering beneath the basalt sampled at holes 338 and 342, which may, therefore, be younger basalt flow created during initial rifting. This should reveal information on the history of this rifted margin and yield samples of initial rifted basalts for comparison with basalts formed later in the history of the ocean. Recovery of the oldest sediments should date the commencement of rifting and indicate the history of vertical tectonics. The upper sediments will be of interest to the Ocean Palaeoenvironment Panel having information on the glacial history of circulation and a Neogene-Palaeoenvironment section.

2. A multiple re-entry site on magnetic anomaly 24 west of the Vøring Plateau Escarpment. The depth of the hole depends upon the results of site 1 (above) since it is desired to correlate the crustal properties of these two sites. The basalts from this site may well correspond to the Thulean Rise province, possibly associated with a peak discharge of a hot spot at 60 m.y.

3. A re-entry site in the Lofoten Basin seaward of the Lofoten Islands in a water depth of 3000-3100 m. The sediment thickness here is 2 km and should reveal a high latitude Cainozoic section and complete record of glacial and interglacial events. The main objectives are to investigate the continent-ocean transition, to investigate the processes during initial rifting and the nature and age of deep, seaward dipping reflectors.

4. A single bit hole on the northern part of the Jan Mayen Ridge, approximately 90 nm south of Jan Mayen Island. The sediment thickness is over 2 km and the water depth 900 m. The intended penetration is less than 500 m with the objectives of drilling into the continental basement in search of pre-drift sediments in order to provide evidence as to whether Jan Mayen is indeed a continental fragment separated from East Greenland. None of the seismic data have revealed acoustic basement within drilling reach.

5. Two re-entry sites are proposed on the southern end of Jan Mayen Ridge near 68°N, 9°30'W in approximately 1.5 km of water. The nature of the opaque seismic layer is questioned, whether it is related to continental fragments forming the southern extension of Jan Mayen Ridge, or due to the shift of spreading axis on the Iceland Plateau. The basalt geochemistry may also reflect the axial migration in the evolution of this area, and also whether the plume basalts extend this far north or whether or not subaerial basalts are present north of Iceland. Data from this site may also indicate whether Iceland extended further north at one time and any possible palaeo-coupling to the Iceland-Faeroe Ridge. This site is also of interest to the Palaeoenvironmentalists where a high latitude Cainozoic section and evidence of glacial and interglacial events can be found.

6. A single bit site on the Greenland-Iceland Ridge near 65°30'N, 27°W in approximately 500 m of water and 500 m sediment thickness. The objectives are to determine whether the Iceland sub-aerial flood basalts are physically connected to the East Greenland basalt province and whether or not they are similar to those of the Iceland-Faeroe Ridge. The tectonic and palaeo-history of this region may also be determined.

The Planning Committee considered these proposals and are anxious that there may be safety problems with some of the sites and suggest that a special meeting of the Safety Panel be convened to consider the Lofoten Basin and Vøring Plateau sites. A small JOIDES delegation will also visit Norway during December to discuss the possibility of drilling within Norwegian territorial waters for the Vøring Plateau site.

Palaeoenvironment Aims in the Norwegian Sea

A proposal submitted to the Palaeoenvironment Panel outlines five areas of interest:

1. Iceland-Faeroe Ridge near site 352. Here the Pliocene and Miocene are absent, and hence a middle Oligocene section could be easily obtained. There is no complete Tertiary sequence down to basement in the North Atlantic and this could be achieved on the southern part of this ridge. This would give information, among other topics, on the comparison of North Atlantic and Scandic biota and hence on palaeocirculation.

2. Iceland Plateau. A complete section from Miocene to Holocene could be achieved here which would provide a much needed link between ice-cores from Greenland and Emiliani's curve. This could provide information on global sea level changes, circulation, production of Atlantic cold bottom water, changes in CCD. This is a high priority hole from the palaeoenvironment point of view.

3. The Northern Norwegian Basin and Vøring Plateau. The forams in this area should be of interest, especially from the pre-Eocene which may throw light on the early evolution of this region.

4. Knipovich Ridge near site 344. If there existed a Greenland-Spitsbergen Ridge, it would be of interest to study the interchange of organisms between the N. Pacific and Scandic areas during the Tertiary. A site north of the ridge where the sediments are not too thick, and avoiding unconformities would be sought.

REPORT FROM THE OCEAN PALAEOENVIRONMENT PANEL

The panel met at L-DGO during 24-27 September 1975.

Legs 46, 47, 50 and 51 Requests

1. The Palaeoenvironment Panel requests that an extra sediment site is drilled on Leg 50 on the 15 m.y. isochron near the proposed Atlantic site 10

near 45°N. The object of this is to sample the Middle Miocene of the Atlantic which had not subsided below the CCD. Earlier drilling information reveals a major re-organization in ocean circulation at this time that should be investigated.

2. To core Neogene sediments on Leg 46 near site 140. This site offers a unique opportunity to sample wind-blown Saharan sediments in order to study the latitudinal shift in the climatic belts during the Pleistocene glacials and interglacials. Additionally, this might provide information on changes in upwelling associated with glacial periods and the history of the CCD in the Eastern Atlantic.

3. If during Leg 51 a choice must be made between sites 2 and 2a, the Palaeoenvironment Panel prefers site 2a on magnetic anomaly M zero, where the oldest sediments overlying the basement will probably be Lower Albian to Upper Aptian. This is a time when the Atlantic was euxinic and where possibly also a different type of metalliferous sediment to that so far collected by DSDP, together with black shales, may be sampled. Also, such a location offers a shallow rise crest environment where calcareous faunas may be recovered when the CCD was only about 3300 m below the rise crest.

4. That one of the sites off N.W. Africa should be in the Moroccan Basin and that Leg 46 should terminate in Las Palmas instead of Dakar in order to reduce passage time. Penetration into the Jurassic basement is of great interest to the panel, and so also is a biostratigraphic record well above the CCD, providing evidence of the subsidence history of the margin of this region.

Shipboard Staffing

The panel expressed concern that sedimentology and palaeontology were inadequately represented on ocean crustal legs. As the amount of sediments recovered will differ greatly from leg to leg, two alternative plans were made dependent upon whether less than 300 m or more than 1-2 km of sediment was likely to be recovered.

1. Less than 300 m of sediment core. The scientific party should contain one sedimentologist and one palaeontologist. Immediate return of the cores would then be necessary so that a shore-based party could analyse and describe the cores for the ICD. The chief scientist of this party would be one of the shipboard soft rock geologists.

The advantage of the shore-based "shipboard" party is that the samples would be known and the scientific party matched accordingly. It is estimated that this would cost approximately $50K per annum.

2. If more than 1-2 km of sediments are recovered. The shipboard party should consist of at least three sedimentologists and four palaeontologists. Immediate return of the core is not necessary and no shore-based party would be required, and the current leg procedure could be followed.

The Planning Committee approved this plan in outline and suggested that it be used as a guideline and taken on a case by leg by leg basis, dependent upon the amount of sediment recovered and the make-up of the shipboard party.

Review of the Drilling Program

1. The evolution of the Atlantic - this theme has been approved by the Planning Committee and more specific locations will be discussed at the January meeting of the panel.

2. The evolution of plankton communities - this was also approved by the Planning Committee, and Legs 54 and 60 are tentatively allocated for this work. An ad hoc Pacific working group will be set up to meet during December 1975 to discuss the details of this plan.

3. The Cretaceous-Tertiary boundary, and

4. Volcanic episodicity are largely ancillary topics which can be fitted into appropriate parts of the program. There will be particularly suitable targets in the S. Atlantic for study of the former.

5. The two topics involving drilling in the Atlantic north of 45°N and Antarctic-Indian Ocean could not be fitted into the IPOD I program, and have been abandoned.

6. The Norwegian Sea - a proposal was presented at the meeting (see Page).

Data Banks

T. Worsley reports that the Cainozoic data on Pacific sites is now complete with respect to nannofossils, foraminifera and radiolaria for all species which occur at at least five sites. The Atlantic and Indian Ocean data banks will be completed up to Leg 35 by January 1976, and the diatom information being compiled by Schrader will be complete and added by the spring of 1976. The Mesozoic data bank is now funded, but not yet operational.

DSDP are preparing fossil check lists so that range charts can be submitted to the data bank at the time of post-cruise meetings. Both the Palaeoenvironment Panel and the Planning Committee urge palaeontologists to use the data bank facility and to submit their data to it as promptly as possible.

The lithologic data bank is also now fully operational, and should be utilized as fully as possible; it is capable of both receiving and outputting information. All appropriate data should be submitted for inclusion into the bank.

Palaeoenvironment Data Minisynthesis

This project is now complete and consists of a series of maps with a brief preliminary introduction. It is entitled "A brief synthesis of DSDP sediments and microfossils from the Atlantic and Pacific Oceans" by I. Premoli

Silva, P. Cepek, T.A. Davies, W.R. Riedel, H.-J. Schrader, H.R. Thierstein and T.R. Worsley. After some final checking, the compilation maps will eventually be published by the National Technical Information Service.

Core Descriptions

The Palaeoenvironment Panel agrees that a distinct loss of information occurs in the transfer of visual core descriptions to the Initial Report, and also that the quality of the descriptions varies considerably. A similar request to that of the Sedimentary Petrology Panel is made, that a chapter of the Initial Report be devoted to sedimentary structures, including a series of charts on the occurrences of sedimentary structures. The parameters should include bedding, if any, lamination, cyclic characteristics, bioturbation, nodular layering and sand layers (contourites, graded or ungraded turbidites). The Planning and Executive Committees are in favour of this and have requested the Sedimentary Petrology Panel to recommend suitable guidelines for carrying this out.

Sedimentary Petrology Panel

The Sedimentary Petrology Panel met in La Jolla on 11-12 September 1975. Action has already been taken on some of the panel's previous recommendations - that sonobuoy studies be carried out on site surveys, that more extensive physical properties measurements are carried out on board, and that new vanes for the vane shear apparatus are in use aboard the GLOMAR CHALLENGER.

Publications

The panel recommend that an index to the Initial Reports be published at the end of Phase III. This matter is already under consideration by the Information Handling Panel and the Planning Committee.

Technical Manual

The panel recommend that such a manual be produced to encompass all routine analyses and methodologies used both at sea and in the shore laboratory. This would include such information as the use of the vane shear, grain size, carbonate and GRAPE, as well as geochemical analyses. The panel are willing to assume the responsibility for gathering the articles. The Planning Committee approved the idea of this publication and Edgar considered that it would be feasible to produce it in the same format as the ICD.

Physical Properties

It is recommended that the water content and Atterberg limit be measured on at least one sample from every "undisturbed" core section back at the shore laboratory.

Inter-Panel Liaison

Better communication with the other panels, particularly the Active and Passive Margins, Palaeoenvironment, Ocean Crust and Downhole Measurement Panel, is requested.

SAMPLE ANALYSES

So far it has been recommended that the following analyses are made. Some panels have not yet contributed to this list and may have additional suggestions to make:

A = ashore B = on board

Analyses	Sedimentary	Hard Rock	
Visual description	*	*	
Smear slide description	*		
Biostratigraphy	*		
Thin section petrology	*	*	
Binocular reflection	*	?	
Major element (wet chemistry and other methods)	*	*	
Mineralogy	*	*	
Microprobe	*	*	
Rare elements	*	*	
Trace elements (emission spectroscopy)	*A	*	(a few elements only)
Stable isotope	*A	*	
Radioactive isotope	*A	*	
Fission track dating	A	*	
GRAPE - density, porosity	*B	*	plus digital processing
Water content	*A		
Atterberg limits	*A		
Bulk density	*A	*	
Grain density	*		
Vane shear	*B	?	
Consolidation & induration	*		optional
Unconfined compression	*		optional
Sonic velocity (Hamilton frame)	*B	*	under both axial and hydrostatic compression
Thermal conductivity	*	*	
Magnetic properties	*B	*	using a spinner orcryogenic magnetometer
Palaeomagnetism	*B	*	
X-ray analysis for sed. structures	*		
XRF	*B	*B	
XRD	*B	*	
Pyrolesis fluorescence (for hydrocarbons)	*		
Pressure core barrel	*		
Natural gamma radiation	*	*?	
Gas chromatography	*	*	
Basic stains	*		
Carbonate bomb	*		
Carbon carbonate	*A		
Sieve analysis	*		

Analyses	Sedimentary	Hard Rock
Q/F	*	
A/F		
Ca/Dol	*	
Total clay	*	
Gas	*	
pH	*	
RFA	*	
AAS	*	
Vitrinite analysis	*	
Organic geochemistry	*	
% abundance of foram species	*	
Benthonic/planktonic foram ratio	*	
% abundance of nanno species	*	
% abundance of other micro-fossil taxa (silicious)	*	
% coarse and fine faction carbonate	*	
Oxygen isotope	*	
Carbon isotope	*	
Quantitative component analysis of the coarse faction	*	

FROM THE PALAEONTOLOGY AND BIOSTRATIGRAPHY PANEL

This panel held its final meeting on 19 October 1975 in Salt Lake City.

Initial Reports

It was agreed that the quality of information in these reports varied enormously and that the poorer papers would probably not pass the referee system for other journals. It was recommended that shipboard palaeontologists should submit their manuscripts to at least two outside reviewers for critical appraisal to establish their scientific validity.

Shipboard Staffing

The question of what level of scientist should be recommended for the shipboard participation was discussed, whether it should be an established expert in the field or a student who would benefit and learn from the experience. The matter was undecided.

The panel decided that a list of potential shipboard palaeontologists should be drawn up from those capable of handling the palaeontological problems of specific cruises, classified according to expertise, and from which the shipboard participants could be chosen.

The panel recommend that for crustal drilling legs that at least one palaeontologist should be assigned to the shipboard party (preferably one having expertise in calcareous nannos or forams). It is also recommended

that the sedimentologist or palaeontologist making smear slides should note the presence of benthonic and planktonic forams, calcareous nannonplankton, diatoms, radiolaria, silicoflagellates, ostracodes, phaynomorphs and megafossils.

Study of Overlooked Groups

Two groups, at present little known, which should be studied in future are benthonic foraminifera and molluscan fossils.

Shore-Based Laboratories

The problems of organizing shore-based work in the past were discussed, and a lack of funds was blamed as the main contributing factor.

DOWNHOLE MEASUREMENTS PANEL

This panel met officially for the first time in Salt Lake City on 19 October 1975.

Initial introductions were made and the panel madate and the recommendations of the Ocean Crust, Passive Margin and Planning Committees discussed.

It was agreed that the two main reasons for emphasizing downhole measurements is, firstly, to provide an integrated geological and geophysical sensing around the hole and, secondly, it is impossible to have complete core recovery and hence the logging program should fill the gaps in the record.

Funding for the Logging Program

There are still no funds visibly available for the logging program unless supplementary funds are approved by NSF. At least a month's notice is required for the supply of logging equipment after notification of funding, and hence there will be no program for Leg 45. It is still hoped that logging can take place in time for Leg 46 however.

Instrumentation

Schlumberger (Houston) is prepared to supply logging equipment in the event of DSDP acquiring funds. A "Kuster" temperature sensor has been ordered and should be available for Leg 45.

Oblique Seismic Experiment

R/V KNORR (WHOI) has been scheduled to shoot the explosives for this experiment which will take place during Leg 46. This experiment will take place whether or not there is a logging program implemented. It is planned that a three component geophone will be lowered and clamped into the hole at two different levels. Shots will then be fired to the instrument from two directions out to a distance of approximately 11 km. By comparing these results with those of the sonic log, it is hoped to determine how typical the drill site is of its surrounding area.

USSR Co-operation

Operational logging equipment exists in the USSR and a co-operative logging program has been suggested by the Soviets. It is hoped that one or two DSDP logging engineers will be able to visit Moscow in the near future in order to examine the compatibility of the USSR and US equipment.

Recommendations

Leg 45 - Use of the Erickson-Von Herzen downhole temperature probe where temperatures are less than 50°C if the equipment is available.

Use of the Kuster temperature sensor for the downhole temperature probe in the hard rock portion of each hole every 500 m, and especially after each re-entry (for use where the temperature is greater than 50°C).

Keep a copy of the drilling rate record and make this part of the shipboard report.

Leg 46 - A regular logging program and a logging technician is expected to be available; in which case it is recommended that one should log through the walls of the pipe every 500 m or at each bit change. If there is re-entry log in the borehole, log in the borehole both going down and coming up. Logging through the drill string walls will degrade instrument response, but all except the electrical log should give some response.

The recommended priority for logging parameters is:

Temperature
Sonic
Density
Electrical
Clamped geophones (if oblique seismic experiment is carried out)
Flow meter

The logging program should be adjusted to the firing of explosive charges for the oblique seismic experiment if shooting arrangements have been finalized.

DSDP TECHNICAL ACHIEVEMENTS

DURING PHASES I-III

573	holes drilled at 392 sites
181,906 m	total drilled below sea floor
79,289 m	of sediment cored
42,182 m	of sediment recovered and stored in repositories at Columbia University's Lamont-Doherty Geological Observatory and Scripps Institution of Oceanography

8,638	cores recovered
1,411 m	is the deepest penetration beneath the ocean floor -- this was at site on and Leg 44 in the Atlantic Ocean
582 m	is the maximum penetration into basaltic crustal layers in any single hole. This was at site 332B on Leg 37 in the Atlantic Ocean
6,243 m	of water is the deepest worked in thus far in DSDP -- this was at site 212 on Leg 22 in the Indian Ocean
6,764 m	is the longest drill string ever suspended beneath D/V GLOMAR CHALLENGER — this also was at site 212 on Leg 22
Re-entry	achieved first operation re-entry on December 25, 1970, in 13,000 feet of water at the Venezuelan Basin in the Caribbean Sea at site 146 on Leg 15 -- re-entry can now be used at any desired site
219,395	nautical miles is the distance traveled by D/V GLOMAR CHALLENGER since August 11, 1968, the beginning of Leg 1 until the end of Leg 44 at Norfolk, Virginia on September 30, 1975
65,157.23	operational hours since 11 August 1968. Of this time,

49.96% was spent on drilling and coring
2.45% downtime due to equipment breakdown
.55% downtime due to bad weather
9.18% port calls
37.86% en passage cruising and in port

A FEW VITAL STATISTICS

Bit Size - A 15" drill bit is used for the top part of a re-entry hole when a 13 3/8" casing attached to the re-entry core is cemented in. The normal coring bit has an outside diameter of 10" with a maximum inner diameter of about 3".

For those interested in lowering instruments through the drill bit, the diameter of the opening in the bit is 2 7/16", although there are now plans to remotely jettison the drill bit, thus providing an opening of 3 15/16" maximum diameter.

Bit Temperature - Sea water is circulated through the drill bit constantly and the temperature of the bit is not monitored, but is assumed to be close to the sea water temperature.

Pump Pressure - used varies according to the type of rock being drilled and is usually between 200-300 psi. At 300 psi, 6,000 gallons of water pass through the pump per minute. A working pressure of 1200 psi is occasionally reached, but the higher the pressure the greater the loss of core material.

Minimum Water Depth - 300 m water depth is the minimum so far in which drilling has been attempted. The limiting factor is the accuracy of the dynamic positioning system. The minimum depth is also dependent upon the incidence of tides, currents, etc. The present maximum weather tolerance is a 2 kt current, 45 kt winds and 15' waves. Drilling is unsafe when the roll of the ship exceeds 7°.

Minimum Sediment Thickness - required for "spudding in" the drill bit is 100 m.

Schlumberger Cable - The cable on board that will be utilized by the logging program has recently been tested. It is 7,924 m long and has 7 conductors.

Coring Rates - Coring rates vary betwen 2.8 m/hr and 7.1 m/hr, according to the hardness of the material encountered. The average rate is approximately 4.4 m/hr.

SITE SURVEY PANEL - MEETING 13-14 AUGUST 1975 at L-DGO

The major task of this meeting was to review the site survey proposals for the calendar year of 1976.

The status of the planning for site surveys and those in progress in the Atlantic at sites 3, 4, 5, 7, 8 and Pacific sites 1 and 2, was reviewed.

Downhole Logging

The panel are very concerned to hear that funding for the downhole logging program will only cover 1 or 2 legs of this work (if any). They addressed a resolution to the Planning Committee stating the importance of this part of the program. They particularly recommend acoustic logging since it is this information by which the oceanic crust is so far best known. They emphasize the small proportion of the total budget that such a program would consume and urge that all possible consideration should be given this aspect of the drilling program as soon as possible.

Multi-channel Processing

No clear idea has been formed about the extent of processing necessary for multi-channel data in deep water. It was agreed, however, that it would be wise to allocate funds for post-drilling processing of multi-channel data when the velocity data has been obtained from direct measurements on samples and from downhole velocity logging. The need to focus on the top 1-2 km of the crust was expressed, since this will be the part sampled by the drill. An amount of about $100K will be needed for such processing during 1976, but although there is at present no known source for such an amount of money, it was agreed that this should not come out of the site survey budget. It was felt strongly that oil companies should be approached to establish summer industrial fellowships in order that site survey chief scientists or other geophysicists could use company facilities for the reprocessing of existing multi-channel data.

Purchase of the Remaining Digicon Line Data

The panel considers it desirable that funds be found to acquire the balance of the Digicon Data - the 420 km between site 5 and the Mid-Atlantic ridge crest. It is important that this part be processed in order that the crustal structure can be delineated in this crucial region. The tapes can apparently be purchased for $30K and Site Survey Management are asked to explore the unexpended balance of funds to GSI for this purpose.

Proposal Review Procedures

The panel adopted a formal procedure for the review of proposals for IPOD survey work submitted by U.S. institutions. In order to provide an objective and unprejudiced method of selection from amongst the proposals, the scientific aspects of the review process will be the responsibility of a working group of the JOIDES Site Survey Panel, at least one of whom should be from a non-U.S. institution and with usually 2 or 3 reviews from outside the working group. This working group would select reviewers for the site survey proposals, appraise the comments of reviewers and make written recommendations to IPOD Site Survey Management and the Site Survey Panel.

An annual meeting of this group would be held approximately 6 weeks after the deadline for submission of proposals. The meeting would consist of two sessions: 1) a meeting of the working group alone to appraise the reviews and formulate recommendations, and 2) an executive session with the Project Manager of the Site Survey Management and representatives of DSDP and NSF. The plan formulated by the executive session will be reviewed by the entire Site Survey Panel and forwarded to the Planning and Executive committees and DSDP for approval.

A review of the 1976 ordinary site survey requirements indicated that about 150 days of ship time would be required.

1976 Multi-channel Surveys

It was agreed that about half ($400K) of the survey budget should be allocated to multi-channel work in 1976. The greatest need was for lines across active margin areas e.g. Mid-America trench, where we should try to link with the EXXON line and across the South Philippine Sea transect, where we may be able to tie in with IDOE funded work, thus reducing mobilization costs and enhancing the regional coverage.

SITE SURVEY PANEL - MEETING 20-21 NOVEMBER 1975 at L-DGO

Review of Survey Proposals

A working group, consisting of a representative from the Site Survey, Ocean Crust, Passive Margin panels under the chairmanship of E. Driver met on 19 November to review the proposals. It is considered the task of this group to decide who should be funded to do the survey work, but the task of the Site Survey Panel to determine how the work should be done.

ATLANTIC

Site 6

The site survey data for this site, collected by IPOD/WHOI and USSR scientists was reviewed at the ad hoc Ocean Crust Panel meeting at WHOI on 4 November. Winterer and Bunce approved this site on behalf of the Site Survey Panel that this should be the prime site for Leg 45.

Site 11

The reviewers recommend that existing data be interpreted in this region. The German ship METEOR will visit this area in February 1976 with another ship to carry out 2-ship seismic refraction work using moored buoys and dynamite charges. KOMET has already made reflection profiles across this site.

A proposal has apparently been submitted to the Ocean Crust Panel to suggest that a site 11a, lying between magnetic anomalies 5 and 6, should be added to this transect.

It is similarly suggested that site 9 should be moved to a central horst on 2-3 m.y. old crust.

Since site 11 is covered by at least 1 km of sediments, it is suggested that should site 11a be approved by the Ocean Crust Panel, that survey efforts should be concentrated here.

Site 12

The Site Survey Panel needs clarification from the Ocean Crust Panel as to whether this site will be a re-entry of site 334.

Site 13

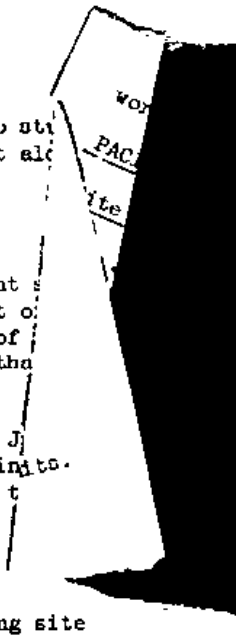
A proposal to work in this area is under consideration. Bedford Institute's ship BAFFIN also intends to spend 5 days in this area and will make magnetic and bathymetric measurements.

Site 14

No additional data are deemed necessary here, this site has low priority anyway on the longitudinal traverse.

Galicia Bank (site 17)

Renard reviewed the status of site surveying at this site. The survey cruise ended a week ago and the data are intended to be in near final form by the middle of January.



Bay of Biscay (site 18)

French scientists plan to spend three weeks in Biscay in December to sti
the ocean-continent transition. 80 km long refraction lines will be shot al
the continental rise and shelf.

Norwegian Sea

It is not clear which panel is concerned with these sites and at what s
the sites should be reviewed from the site survey point of view. At most o
sites it is likely that sufficient data already exist. The compilation of
data will presumably be turned over to Site Survey Management and after tha
Site Survey Panel will take official cognizance of the plans.

IFP/CNEXO plan to spend 40 days in the Norwegian Sea during May and J
with both OBS and multi-channel capability. Survey areas across the Vøring
Plateau and Lofoten Basin are planned, and across the Jan Mayen Ridge if t

N.W. Africa
Cape Bojador

METEOR is currently working in this area, looking for a safe drilling site
than the existing data have yet revealed.

Mazagan Plateau

The plateau site originally suggested may be unsafe to drill, since salt
structures appear to underlie the sediments. An alternative site where Triassic
sediments should be encountered at 2 km is being surveyed. Re-entry will be
required for this site now and it is important that adequate cones are available.
Hinz will contact GSI and Peter Lehner at Shell to look at multi-channel lines
in this area. GSI lines A1S and A1T are appropriate.

CARIBBEAN

Site 15

5 potential sites have been proposed by the Mediterranean Working Group
of the Passive Margin Panel.

IFP/CNEXO will be working in this area next year and have offered to do 15
days work for IPOD during April 1976. They will provide bathymetric and magnetic
capability, but no gravity and will also have a 24 fold multi-channel capability,
using a 1.2 m dia. flexichoc system. Although a sonobuoy receiver will be on board,
this energy source is not very effective for seismic refraction. It was decided
to try to get ships of opportunity to shoot refraction lines in the area after
IFP have identified the sites. The 5 sites were prioritized with the Venezuela
Basin having prime consideration. It was therefore agreed that site surveying
should also focus on this area.

Cayman Trough

This area appears to have low priority for drilling and the site survey [redacted]k here is not approved.

[redacted]FIC

[redacted]3

[redacted]Juan de Fuca, it is considered that this site has been adequately surveyed [redacted] University of Washington.

[redacted]'acific Sites

[redacted]: Site Survey Panel reviewed the proposals received from U.S. institutions [redacted]OD survey work at Atlantic sites 13 and Pacific sites 4, 5, and 6, the [redacted]erica Trench and the South Philippine Sea. These will be further con- [redacted]nd formulated into an IPOD site survey program for 1976.

[redacted]Su

[redacted]South China Seas

[redacted]rvia (FGR) will be working between Hawaii and Darwin during late 1977 and 1978 and may be able to divert to work in the Sulu and possibly also in the South China Sea. The vessel will have multi-channel, gravity, magnetics, sounding and refraction capability.

The USSR ship MENDELEEV may work in the South Philippine Sea towards the end of 1976.

In areas which are less well understood it is hoped that site surveying can take place in two stages, commencing with a multi-channel line as a basis and then more detailed geophysical and multi-channel work to follow up.

Recognition of Non-U.S. Site Surveys

The desirability of establishing a more formal arrangment for incorporating the non-U.S. site survey data into the IPOD data bank was discussed. So far very few of these data have been received by Site Survey Management. It is recommended that non-U.S. survey plans should be submitted to the Site Survey Panel prior to the work being done in order that there can be some procedure set up where the plans can be reviewed and the survey recognized as being an IPOD site survey. It is recommended that the non-U.S. survey data are submitted in a similar form to that laid out in the Site Survey Management Guidelines for the U.S. Surveys and that data presentation, chart scales, submission dates etc. be followed as closely as possible. This matter will be put to the Planning and Executive committees for their recommendation as to procedure.

Survey Data Dossiers

The panel members request that Site Survey Management produce short reports on the sites completely surveyed in order that members may learn what data are available and the basic characteristics of each area.

Safety Panel Recommendations

Dr. Hollis Hedberg attended the meeting to discuss safety factors. A new safety manual is under review and will be distributed shortly.

Clathrates

Hedberg outlined the problem of clathrates, where at certain pressure-temperature conditions methane and other gases combine with water to form a solid. Gas accumulations could then occur at the base of the clathrate zone where there would be no apparent geologic structure, and the accumulation caused by a change in the thermal structure. The Organic Geochemistry Panel are preparing maps of thermal gradients and possible clathrate intervals.

The desirability of the Safety Panel reviewing potential sites before they became too final was expressed, also that somebody au fait with reservoir rocks should be on board during surveying in potentially dangerous areas. Bottom waters may also be usefully collected and analyzed for ambient hydrocarbon content during site surveying.

Site Survey Guidelines

These guidelines are undergoing revision to include active and passive margin sites. The panel discussed the various modifications to the text.

Drilling within Territorial Waters

There is an urgent need to clear drilling permission with adjacent nations in view of the impending claim of a 200 nm territorial limit offshore by many nations. The Gulf of California sites lie within Mexican waters and the Middle America Trench within Guatemalan waters. The Site Survey Panel urge the JOIDES Executive Committee to implement the gaining of permission to survey and drill these regions as soon as possible.

Lead Time for Site Surveys

The efficacy of the Site Survey Panel suffers considerably by the problem panels and the Planning Committee not making final decisions about sites sufficiently in advance to allow enough lead time required for site surveying. The site decision should be made at least 18 months in advance of it being drilled.

Miami Meetings

The Site Survey Panel requests solid representation at the Passive Margin meeting in order to help select the site data for Legs 47-49 since the data are not in a sufficiently final form at the time of this meeting. It is also suggested that a working group of the Site Survey Panel consisting of Renard, Fahlquist and Watkins with Markl from Site Survey Management meet on 7 January in Miami to discuss Caribbean survey data and that they combine with the Passive Margin Mediterranean Working Group on 8 January.

SYNTHESIS OF ATLANTIC SITE SURVEYS

Site 1 is located near 33.14°N; 72.09°W at the NW edge of the Hatteras abyssal plain in the Jurassic magnetic quiet zone (165 m.y. isochron). The water depth at this location is 5200 m and the sediment thickness about 1500 m. The basement (layer 2) surface is smooth on a regional scale. Preliminary analysis of the IPOD multichannel line and the University of Texas multichannel survey carried out for IPOD shows a clear Moho reflection and some suggestions of intermediate sub-basement reflections.

Site 2, located near 31.37°N; 68.35°W on magnetic anomaly M17, lies in 5050 m of water on the western flank of the Bermuda Rise. Horizons A and A* can be distinguished within the 700 m of stratified sediment overlying the regionally-smooth basement surface. Although a clear Moho reflection was recorded by the IPOD multichannel line continuously from site 1 through site 2, coherent intermediate sub-basement reflections are not apparent. Existing reconnaissance data, supplemented by several IPOD (WHOI) survey lines indicate that the site is in an area of lineated magnetic anomalies, and away from fracture zones.

Site 2a is located on magnetic anomaly M0 near 30.26°N; 66.19°W south of Bermuda in 4830 m of water. Approximately 700 m of stratified sediment overlies the regionally-rough basement. The IPOD multichannel line shows no clear sub-basement reflections in this area, these may be revealed in the OBS refraction data now being analyzed. The IPOD (WHOI) site survey of this area indicates that it is in a region of linear magnetic anomaly trends and removed from significant fracture zones.

Site 3 is situated on anomaly 34, immediately south of the western extension of the Kane fracture zone, at 24°28'N; 58°31'W. The water depth at the site is 5850 m and the sediment thickness is 180 m (see Rabinowitz & Ludwig, GEOTIMES, Oct. 1975 for additional information). The portion of the IPOD multichannel line through site 4 has been processed, however, the rough basement surface typical of this area greatly inhibits resolution of possible sub-basement reflectors.

Site 4 lies on anomaly 13 just north of a fracture zone - near 23°29'N; 50°04'W. Topographic trends in the survey area are confused; water depth at the site is 5500 m. Sediment ponds are quite sparse here near the ridge crest - the site chosen lies in a deep NNE-SSW-trending trough about one mile wide. (See also Rabinowitz & Ludwig, GEOTIMES, Oct. 1975).

Site 5 is located on anomaly 4 west, in North Pond (Van Andel and Komar, 1969). The IPOD (HIG) site survey revealed two fracture zones spaced 30 miles apart having offsets of about 5 miles. North Pond, the best favored site, contains 200-300 m of sediment, occurs in an E-W trending topographic depression between the fracture zones though does not exactly coincide with the peak of the magnetic anomaly. The IPOD multichannel data in the area are presently being processed.

Site 6 is located on anomaly 5 East, in a sediment pond at 22°56'N, 43°31'W; the water depth at this point is 4400 m. The results of the preliminary IPOD survey carried out by Soviet scientists aboard R/V KURCHATOV, combined with the subsequent IPOD survey by WHOI, indicate that the topographic trends and magnetic lineations are much more regular at site 6 than at site 5; also, the

site 6 sediment pond coincides exactly with anomaly 5, rather than over the adjacent transition zone. This is the currently favored location for the "very deep" hole to be drilled during Leg 45.

Site 7 has not yet been pinpointed within the one degree square surveyed for IPOD by German and L-DGO scientist. The area straddles a boundary between rough basement typical of the ridge flanks on the west, and a somewhat elevated region of very smooth basement to the east. Although the area lies within a belt of lineated magnetic anomalies, the identity of the anomaly within the survey area is uncertain; it is either anomaly 32 or 33. Thus, as they stand, site 7 and site 3 (located upon anomaly 34) will not be exactly symmetric, as was initially planned. The existence of fracture zones and offsets can be inferred from the topographic and magnetic data. The sediment thickness in the area averages 200 m. The water depth in the smooth zone is about 4660 m; in the rough zone it ranges from 4480-5400 m.

Site 8, at which a series of holes across the Vema Fracture Zone is planned, has been extensively surveyed for IPOD by L-DGO, the University of Miami, and by Soviet scientists aboard R/V KURCHATOV. Bathymetric and sediment isopach maps of the region will be produced as a joint effort. A preliminary analysis of the seismic refraction data indicates that crustal layers 2 and 3 do not outcrop on the walls of the transform trough, but bend beneath it - thus it appears that the trough will not provide a "window into Layer 3.

Assymetry

The fact that the site surveys have revealed fundamental differences between sites 5 and 6 and 3 and 7 respectively, poses an even stronger question on the symmetry of the sea-floor spreading process. Site 6 shows considerably greater linearity in topography than site 5, and similarly sites 3 and 7 have large topographic differences. Within site 7 even there is a distinct boundary between rough and smooth topographic areas. It appears desirable that all these sites should remain in the program and be sampled to investigate this fundamental concept of the sea-floor spreading theory.

LEG 43 REPORT

The purpose of this leg was to investigate the Late Mesozoic and Cainozoic history of sedimentation, circulation and volcanism in the central and northern part of the W. North Atlantic Basin. GLOMAR CHALLENGER departed from Istabul on 13 June and arrived in Norfolk on 12 August 1975.

Six sites were drilled on the J-anomaly ridge, the New England Seamounts and on the Bermuda Rise, and the major objectives at all sites were achieved.

The J. Anomaly

It is a high amplitude (1000 nT) magnetic anomaly observed at the young end of the Keathley sequence in the North Atlantic. A similar high amplitude anmaly is not seen in the Pacific Ocean crust of the same age, and thus the magnetic properties of the basement forming a steep west facing escarpment and underlying this anomaly were to be sampled. Site 383 did not reach basement, but site 384 recovered weathered basalt with no undue concentration of opaque

minerals. Further petrographic, chemical and magnetic studies are necessary to determine the titanomagnetite iron/titanium oxide ratio and remanent magnetization of the sample.

The New England Seamounts

Were sampled at site 382 near Nashville Seamount and at site 385 on the lower flank of Vogel Seamount in order to investigate the volcanic history of the seamount chain. It was also required to test the hot spot hypothesis which predicts that the 400 km separation between the seamounts should show a 10 m.y. age difference. Upper Cretaceous volcanic detritus was encountered at both seamounts and two intervals of volcanoclastic breccia near Nashville Seamount of Coniacian-Santonian or older and early Campanian , respectively. There is a possibility that the two events were coeval. Palaeoentological control is poor and since neither hole penetrated into oceanic crust, it is not yet possible to resolve the hot spot or non-hot spot question.

Cretaceous History of the W. North Atlantic

The oldest sediments sampled were Upper Berriasian to Lower Barremian at site 387 on the western Bermuda Rise. Similar lithofacies found on both sides of the N. Atlantic indicate that these sediments record the depositional environment of the Early Cretaceous N. Atlantic. These limestones indicate deposition in an open ocean, pelagic environment with a very restricted deep water circulation. The sedimentation rates of 20 m/m.y. decrease upward reflecting decreasing carbonate accumulation on the subsiding sea floor.

The anoxic facies are Barremian at site 387, Upper Aptian/L. Albian - U. Cenomanian at 386 this suggests that the oxygenation of the basin was a gradual process not complete until late Cretaceous.

The Cretaceous - Tertiary boundary is well documented at site 384 and shows no physical evidence of a disconformity. However, the near absence of transitional fossils between U. Maestrichtian and L. Danian does not preclude a short hiatus of less than 1 m.y. These observations are not consistent with the dramatic shoaling of the CCD at the end of the Cretaceous postulated by previous investigators.

Eocene-Oligocene volcanism on Bermuda was documented by site 386 where an igneous faction in turbidites record the weathering and denudation of Bermuda as it rose above sea level. Upper Cretaceous variegated clays may also indicate an earlier episode of volcanism.

DSDP SITE REPORTS

Leg 43: Drs. B. Tucholke and P.R. Vogt report -

Site 384 - on the J anomaly ridge in the western N. Atlantic south of Grand Banks. The upper 200 m were Middle Eocene to L. Maestrictian marly nanno and foram ooze at 40°21.65N, 51°39.8'W in 3920 m water depth with excellent preservation across the Cretaceous-Tertiary boundary and good radiolarian fauna down to the early Palaeocene. A high carbonate content indicates relatively uniform

accumulation above the CCD fluctuations. A 4-6 m.y. hiatus and chert in the Lower Eocene correlates with Horizon A.

From 200 to 325 m Coniacian-Santonian to ?Aptian shallow water bioclastic lagoonal limestones were sampled, indicating more than 4000 m of subsidence for this part of the J anomaly ridge in the past 80-87 m.y. Below 325 m weathered, highly vesicular basalt from two flows extruded subaerially and in shallow water. The tentative Aptian age of the limestones indicates that anomaly M-1 is at least 105 m.y. The hole was terminated by a plugged bit and jammed core barrel in the basalt.

Site 385 - was drilled in 4956 m of water through the sediments and volcanoclastics forming the north flank of Vogel Seamount. 37 22.17'N, 60°09.45'W. Total penetration was 392.9 m. A total of 24 cores were taken with a recovery of only 63.4 m which reflects the poor coring performance in cherts and uncemented volcanoclastic sands and gravels. A spot cored Pleistocene to Lower Miocene overlies continuously cored L. Middle to U. lower Eocene clays and cherts with well preserved radiolaria. Horizon A was traced from beneath the Sohm Abyssal Plain to 0.2 secs subbottom and is correlated with alternating chert and radiolarian ooze interval at approximately 160-175 subbottom. 175-212 m consists of zeolitic clay and chalky claystone with poorly preserved radiolaria. A L. Danian marly ooze at the base of the unit does not support the hypothesis of extreme elevation of the CCD near Cretaceous/Tertiary transition. 212-279 m are M. to L. Maestrictian and older banded volcanogenic clays. 279-392.9 m consists of as yet undated volcanic clay, silt, sand and gravel and occasional breccia layers. The major volcanic activity on Vogel Seamount was pre-Mid or lower Maestrictian, the actual time of volcanism must rely on hard rock dates.

Site 386 - on the Central Bermuda Rise at 31°11.21'N, 64°14.94'W in 4783 m of water. 974 m were drilled and 66 cores taken. The section showed 0-62 m Pleistocene marly ooze overlying 62-156 m of Pleistocene to Miocene zeolitic clays. 156-328 m Oligocene to U. Eocene volcanoclastic turbidites overlain by uppermost Oligocene calcareous turbidites. 328-410 m M. Eocene siliceous and calcareous (410-482 m) cyclic successions. 482-630 m Palaeocene to M. Eocene radialarian and cherty radiolarian mudstones and 630-725 m U. Cenomanian to U. Maestrichtian multicoloured claystone. 725-966 m were U. Aptian (?L. Albian) to U. Cenomanian sapropelic claystones containing nannos overlying basalt. Deposition was highly variable in rate though predominantly continuous. Short hiatuses occurred in Mid to late Oligocene and Mid to Late Eocene. Horizon A matches the top of siliceous M. Eocene section and short hiatus.

Site 387 - at 32°19.20'N, 67°40.0'W in 5118 m of water. The drill penetrated 791.6 m of sediment and 2.9 m of basalt. The Pleistocene to U. Oligocene was spot cored and pelagic zeolitic clays were found. 100-178 m were lower U. Eocene to U. Oligocene radiolarian mud. 178-224 m were M. Eocene siliceous turbidites and rad. oozes and muds. 224-370 m were L. to M. Eocene cherts and rad/nanno claystones. 370-479 m Palaeocene siliceous claystones, U. Maestrichtian marly chalk, and red claystones. 479-585 m undated but probably Aptian to Campanian black to gray sapropelic claystones. 585-792 m were U. Hauterivian/L. Barremian to U. Berriasian/L. Valanginian chalks, limestones with interbedded gray to black marls. 792.9-794.5 m dense, subalkaline basalt flow or sill. Acoustic reflectors correlate: - A - Eocene chert, A* - M. Maestrichtian red claystone and B - Neocomian limestones. The beginning of sapropel

deposition may coincide with the uplift of the MAR at the end of Keathley time and consequent reduced circulation.

LEG 44 - Drs. W. Benson and R. Sheridan report:

Site 388 - only one core was recovered, no report received.

Site 389 - on the Blake "Nose." This hole aborted after a bumper sub bent in an unsuccessful attempt to spud in on a gravel of manganese nodules and shell fragments.

Site 390 - at 30°08.5'N, 76°06.7'W in 2656 m of water. This site is also on the Bank Nose. Holes 390 and 390A continuously cored 206 m finding M. Eocene ooze overlying a nearly complete L. Eocene and Palaeocene with abundant nannos, rads and forams. A hiatus was found between Danian and M. Maestrichtian and a major anjular unconformity between Campanian and Albian. Oolitic Barremian limestone with ammonites and pelcypods at 170 m is underlain by fine-grained unfossiliferous off-reef facies. The hole bottomed at 206 m due to a stuck inner core barrel.

Site 391C - at 28°13.61N, 75°37.00W in 4975 m water depth. This is the record penetration so far, terminating the bit at 1412 m on hard U. Jurassic chert. 0-149 m sampled Quaternary hemipelagic mud. 149-649 m Miocene carbonate turbidites. 649-929 m dark green to black carbonaceous clays, probably U. Cretaceous at the top and Albian near the base. 929-1006 m gray Aptian claystone. 1006-1260 m nearly complete Neocomian limestone sequence, 1260-1331 m U. Tithonian white limestone. 1331-1414 m variegated limestone and ammonite bearing red clay limestone, L. Tithonian. Horizon A is the Miocene-Cretaceous unconformity. Major accomplishments include the discovery of 500 m of Miocene carbonate turbidites and gravity flows, and a complete L. Cretaceous section and the Cretaceous-Jurassic contact. Re-entry failure prevented the bottom 200 m of sediment and the basement of the quiet zone being sampled.

Additional Meetings

Leg 40	26-30 January 1976	at L-DGO
SSP Caribbean working group	7- 8 January 1976	at Miami
IMP mediterranean working group	8 January 1976	at Miami

BYE BYE TERRY

We are all very sorry to lose our Chief Scientist, Dr. N. Terry Edgar, who has been with DSDP since the beginning of the program in 1968. Terry is to be head of the marine section of USGS and will be based at Reston, Virginia. This group will soon have drilling capability on the continental shelves of the U.S. and it is likely that co-operative work between DSDP and USGS may be possible in the future. JOIDES wishes Terry all the best in his new job.

LEG 44 REPORT

GLOMAR CHALLENGER departed from Norfolk on 15th August and returned on 30th September, 1975. 11 holes were drilled at five sites.

Site 388: Two holes were drilled near 35°31'N 69°23.7'W in 4919 m of water. The first hole was abandoned when the pinger core barrel became wedged in the pipe and at the second the tar line from the replacement sand line blocked the drill pipe and forced abandonment of the hole after 341 m of penetration. Gas was found in the Miocene hemipelagic clays at about 300 m sub-bottom, with methane and ethane in the expected ratios from pelagic sediments. Unfortunately, owing to a failed ball valve in the pressure core barrel, it was not possible to take pressurized samples.

Seismic reflection profiles showed the Mid-Miocene reflector to be nearly planar below the topography of the continental rise hills. The bedding above is relatively undisturbed and there is no evidence of slump folding.

Sites 389 and 390: Site 389 failed to "spud in" but two sites were drilled at 390 near 30°08.5'N 76°06.7'W in 2670 m of water on the Blake Nose. The Cretaceous/Tertiary boundary was indentified and a major hiatus below which Albian-Barremian sediments were recovered. Soft oolitic limestone then clogged the bit after penetrating 206 m. Hole 390a then cored through Eocene/Palaeocene/Maestrichtian contacts, providing a good opportunity to study these biostratigraphic zones in a plateau facies.

Two prominent reflectors were identified as Early Eocene to Late Palaeocene cherty limestones and a major hiatus between the Campanian and Albian. The contact between shallow water Barremian oolites and pelagic Aptian-Albian nanno ooze indicates a relatively rapid subsidence. Both limestones and ooze can be traced to a reef structure whose growth apparently kept pace with the subsidence until Cenomanian-Santonian times.

Site 391: Four holes were drilled near 30°13'N 75°36'W. The re-entry cone was lost at the original site and eventually at hole 391c the record penetration of 1412 m was achieved with a single bit.

The Cenozoic section was found to consist entirely of Quaternary hemipelagic muds and reworked Miocene carbonates. The Pliocene and entire early Tertiary are missing. Underlying the Miocene chalk breccias are black clays of mid-Cretaceous age and here, perhaps the best documented biostratigraphic section of Lower Cretaceous yet was recovered.

Three of the six prominent reflectors were identified and correlated: Horizon A with the Miocene-Cretaceous unconformity, Beta with the upper Neocomian/basal Aptian transition from clays to limestones and a third with the top of Tithonian red clayey limestones.

Site 393: Two holes were drilled near 29°54.6'N 76°10.6'W in 2606 m of water on the south rim of the Blake Nose. The main objectives were to identify the reef-like structure on the south rim of the Nose, together with its composition and history. The first hole was unsuccessful but the second penetrated 349 m. The stratigraphy is essentially that of the lower part of site 390 - Campanian ooze directly overlying Aptian-Albian ooze, with no trace of the lower half of the U. Cretaceous. The interpretation of the stratigraphy implies that the reef and its associated shallow bank area grew during the early Cretaceous and that accumulation ceased by late Neocomian or early Barremian time. The Blake Nose then subsided and pelagic oozes were deposited. Further south, however, on the Blake Escarpment, reef building appears to have terminated in the Late Cretaceous.

STOP PRESS

Re-entry Cones

The cost of maxi re-entry cones is found to be around $30K - lower than anticipated. Both France and Germany have sent letters of intent on the topic of having the next supply of cones built outside the U.S. There are problems, however, on the hold ups in DSDP funding that this might create and in the light of this it may be propitious for alternative plans to be made for Legs 47 and 48, excluding the use of re-entry capability.

Leg 44A

A maxi-cone was lowered on 17 November. The acoustic device showed two targets confusing the cone and the beacon. The cone was eventually lost, although tests for the pressure core barrel and heave compensator continue. The ship is expected to arrive in San Juan on 28 November.

Obituary

We are sorry to announce the death of Academician A.P. Vinogradov, on 15 November. He was Vice President of the USSR Academy of Sciences and JOIDES Executive Committee member.

JOIDES Journal is produced by the JOIDES Office at Lamont-Doherty Geological Observatory.

JOIDES PANEL AND COMMITTEE MEETINGS

	1975		1976											
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
XCOM		ad hoc 9 LDGO	16-17 Miami											
PCOM			13-15 Miami			19-20 Wash. D.C.			6-8 Boulder			5-7 Brest		
OCP	Ad Hoc 4 L-DGO	2-3 DSDP	Ad Hoc 19 WHOI			17-18 Wash. D.C.			20-21 U.K.			12-13 L-DGO		
AMP						5-7 ?								
FMP			9 -11 Miami											
CFP			9 -11 Miami					1-3 Boulder			27-29 Brest			
SSP	20 - 21 L-DGO			18-19 LDGO ?										
Sed.Pet.			9 -10 Miami											
IGP														
OGP														
Strat.Cor.														
Down Hole			12 Miami			16 Wash DC								
Safety			26 LDGO											
IH				8 DSDP										

Leg	45	46	47a	47b	48	49	50	51

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* 3 other panel members have been invited.

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