JOIDES Journal

September 1976

No. 6

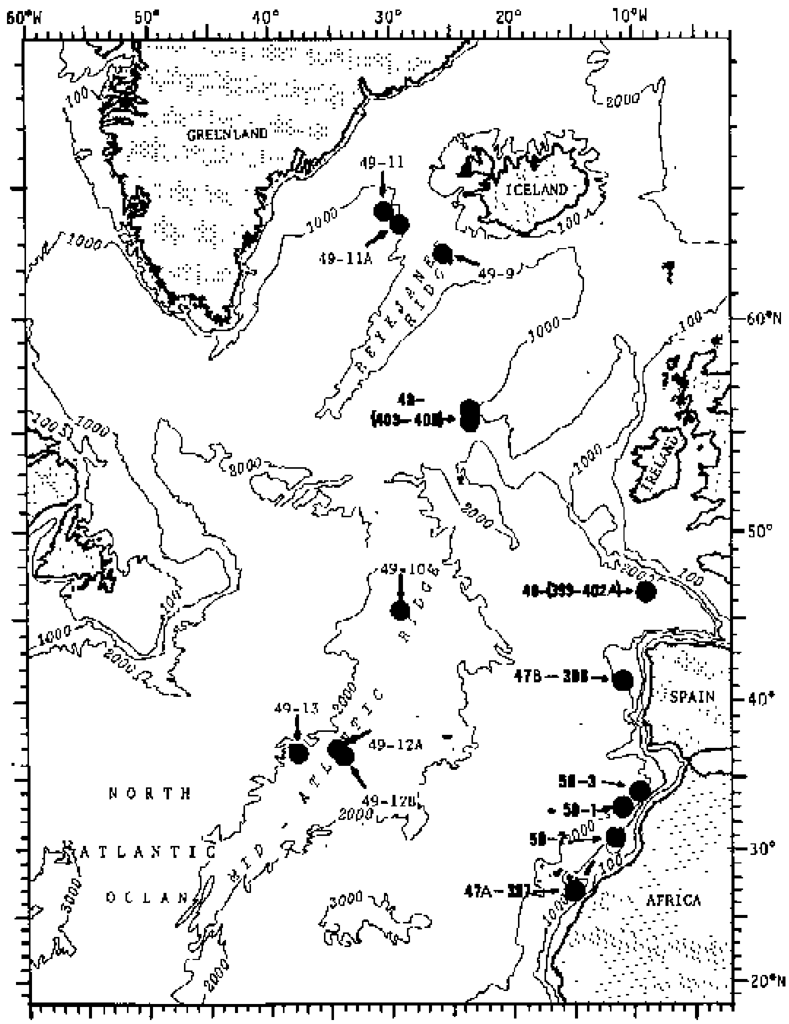

Figure 1. Legs 47-50: Leg 47 & 48 (Drilled Sites), Leg 49 & 50 (Proposed Sites).

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Figures of the Pacific and Atlantic tracks are at the center of this issue of JOIDES JOURNAL.

LIST OF FIGURES

JOIDES JOURNAL is produced by the JOIDES Office at the Department of Oceanography WB-10, University of Washington, Seattle 98195. Telephone: 206:543-5099.

ADDENDUM TO JOIDES JOURNAL, SEPTEMBER 1976, NO. 6.

PROGRAM FOR DRILLING AFTER OCTOBER 1979

The JOIDES Planning Committee has been giving serious attention to the nature of the IPOD program beyond October 1979. Originally the program envisaged an increase in drilling capabilities that would enable IPOD Phase II to drill safely into continental margins with a riser system (plus blow-out prevention) capable of operating in water depths to 3600m. IPOD Phase II would require a larger drilling vessel. Technical and financial problems associated with designing and building such equipment suggest that the new equipment will not be available until the early 1980's. Because good scientific objectives can be met by a continuation of IPOD Phase I drilling, the Planning Committee is now preparing a scientific program to continue the use of a drilling vessel without risers for approximately two additional years (beyond October 1979). The Planning Committee would welcome appropriate suggestions by any scientist for consideration in this program. Suggestions should be submitted by February 1977. This plan, in turn, will be considered in March 1977 at a meeting sponsored by the JOIDES Executive Committee devoted to the subject of the Future of Scientific Ocean Drilling. Those not fully familiar with the current status of IPOD may wish to consult the following publications:

International Phase of Ocean Drilling, W. G. Melson, Geotimes 6/75, pg. 25.

Drill Sites Proposed for International Phase, P. D. Rabinowitz and W. J. Ludwig, Geotimes 10/75, pgs. 21-23.

Active Margin Drilling, S. Uyeda, Geotimes 11/75, pg. 19

Scientific Plans for Deep Sea Drilling, C. A. Williams, Nature 1976, 259, pgs. 83-86.

Passive Ocean Margins, J. R. Curray, Geotimes 2/76, pgs. 26-27.

Please direct any comments or input by early 1977 to:

Dr. Dean A. McManus
JOIDES Office
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195 USA

TENTATIVE SCHEDULE - IPOD

Leg		Arrival Date	Departure Date	Days at Sea	Purpose
50	Funchal, M.I.	7 Sept	12 Sept	46	Moroccan Basin - (1)**
	Arrecife, C.I. Bermuda	29 Oct	29 Oct*	13	
51	Bermuda	11 Nov	16 Nov	34	Sites 2, 2A - (1)
52	Bermuda	20 Dec	25 Dec	52	Sites 2A, 2, 3, 4 -
53	Balboa	15 Feb 77	20 Feb 77	51	Pacific Site 4 - (1)
54	Manzanillo	12 Apr	17 Apr	51	Pacific Site 5, 6±, Pac 4 -
55	Honolulu	7 June	12 June	51	Emperor Seamounts,Pac7-(1)
56	Tokyo	2 Aug	7 Aug	51	Okhotsk Sea; Japan Trench
57	Kobe(drydock)	27 Sept	9 Oct	51	Shikoku, N. Philippine Sea
58	Guam	29 Nov	4 Dec	51	S. Philippine Sea
59	Guam	24 Jan 78	29 Jan	51	S. Philippine Sea;Nauru Basin
60	Honolulu	21 Mar	26 Mar	51	Old W. Pac. Paleoenvironments; Seamounts
61	Honolulu	16 May	21 May	51	NE Pac. Paleo-environment
62	San Diego	11 July	16 July	51	East Pacific Rise
63	Acapulco	5 Sept	10 Sept	51	Gulf of California
64	Acapulco	31 Oct	5 Nov	51	Mid-America Trench; Peru-Chile Trench
65	Balboa	25 Dec			Sites for Legs 65 through 69 will be selected by the Planning Committee at a later date.
66	Recife				
67	Luanda				
68	Las Palmas				
69	Norfolk-Galveston (Demobilization)				

*Leg 50 will end in Bermuda if hole is completed within one leg. If more than one leg is needed a port stop in Las Palmas will be made to change crew and in Bermuda to collect any additional equipment.

**(1) = re-entry

THE FUTURE OF SCIENTIFIC OCEAN DRILLING

Plans are underway for a meeting to be held next spring at La Jolla, California to consider The Future of Scientific Ocean Drilling. The Executive Committee appointed a sub-committee consisting of some of its members, foreign representatives, and scientists from outside JOIDES to lead the meeting and report the findings to the Executive Committee.

The purposes of the meeting are:

1. to consider the scientific potential for future deep sea drilling operations in the light of submissions from the JOIDES panels and the international scientific community;

2. to review these potential operations in relation to:

   a. continued use of a vessel of GLOMAR CHALLENGER class up to 1980,
   b. possible use of GLOMAR EXPLORER type vessel or an alternative after that time, and
   c. to provide an assessment of the alternative programs possible;

3. to consider the desirability of closer coordination of DSDP operations with the Geodynamics project and the activity of other agencies, and to make recommendations for collaboration as necessary, and

4. to advise the Executive Committee of their findings as a basis for decisions on programs and planning, and on the balance between drilling, geological and geophysical means of investigation.

NEW COMMITTEE CHAIRMEN AND RELOCATION OF JOIDES OFFICE

As of the July 1976 Planning Committee meeting held at Boulder, Colorado, the chairmanships of the JOIDES Executive and Planning Committees rotated to the committee members from the University of Washington, Seattle. Maurice Rattray, Jr. replaces Manik Talwani and Joe S. Creager replaces John Ewing as Executive and Planning Committee chairmen, respectively. Additionally, Planning Committee alternate Dean A. McManus has been named Planning Committee Assistant Chairman. Basically, Joe Creager will handle short- and middle-range planning and Dean McManus will deal with long-range planning.

Concomitant with these changes is the moving of the JOIDES Office from L-DGO to the University of Washington. The address is:

JOIDES Office
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195 USA

Telephone: 206:543-5099
TWX: 910-444-1430

July also marks a change in the JOIDES Scientific Coordinator position. Dr. C. A. Williams has resigned and Dr. Peter E. Borella is the new coordinator. Mrs. Tomi McManus is the JOIDES Office secretary.

REPORT FROM THE EXECUTIVE COMMITTEE (22-23 April and 3-4 August meetings)

Relationship of JOIDES, NSF, and DSDP

The U.S. membership of JOIDES is now incorporated as a non-profit organization under New York State law and is to be known as JOI Incorporated. The relationship of JOI Inc to JOIDES is at the Executive Committee level and the Directors of JOI Inc shall be the U.S. members of the JOIDES Executive Committee. The JOIDES structure will remain intact and it is not anticipated that in any way will the existence of JOI Inc interrupt the relationships of the U.S. and non-U.S. member institutions in JOIDES. Through this action JOI Inc can be legally recognized by NSF, and accept funding directly from NSF or any other funding agency. In the light of this it was thought timely to examine the relationships of JOIDES and JOI Inc to DSDP and NSF and to see whether a relationship other than the present mode would be more beneficial. A sub-committee was established to examine these relationships.

Sub-committee Report

The purposes of the report were to 1) clarify and determine what the responsibilities and activities of the three major bodies (NSF, JOIDES, DSDP) were, and 2) show the relationships of these independent organizations to each other. Their responsibilities are briefly summarized.

NSF. The NSF is the sponsoring organization for the project and is accordingly responsible for seeking and acquiring the necessary funds, whether from the U.S. Government or foreign participants to the program, on the basis of a clearly defined program. It is responsible for overall scientific review and the economic, effective and proper expenditure of those funds on the agreed programs and is accountable in this regard to the funding authorities. It accordingly has a prime responsibility for the allocation of funds, the granting of the necessary financial authority (which it may exercise, at its discretion, by way of delegated authority to DSDP) and forward financial planning.

JOIDES. JOIDES, the executive arm of JOI Inc for IPOD, will be responsible for advising on the following: establishment of project priorities, future projects, budget estimates, the selection of sea-going scientific staff, ensuring the provision to NSF of safety advice, post-cruise activity policy, JOIDES HQ administration, meetings and travel policy and the provision of adequate mechanisms for the transfer of factual information. Above all, it will recognize a general responsibility for monitoring the overall progress of IPOD. It will discharge these functions through the JOIDES Executive Committee established under the terms of Article VII of the By-laws of JOI Inc.

DSDP. DSDP will be responsible for general operational management of the project which includes operational planning, development, and execution of the scientific objectives determined by JOIDES, advising on the organization of site surveys, the planning of drilling operations, determining the provision of logging and downhole instrumentation and organizing the necessary logistics.

Terms of Panel Membership

Until now the tenure of panel membership has been understood to be renewed annually, but generally valid for two years. A formal arrangement will now be inaugurated by which no panel membership will continue beyond a term of two years unless it is formally renewed. The panel membership lists at the back of future issues of JOIDES JOURNAL will indicate dates of commencement of membership. The Planning

Committee is requested to review panel memberships once a year.

Safety Considerations for Deep Margin Sites

The Committee considers that deep margin drilling should not be ruled out per se on grounds of safety, but that the safety review should be continued on a case-by-case basis, and retain in the program alternative lower risk sites for any sites that have an appreciable risk factor. It is recognized that the chief scientists and members of the Pollution Prevention and Safety Panel will have increased responsibility at times when these sites are considered.

Budget Sub-committee Report

It was recognized that scientific planning can more efficiently be carried out and priorities established if the limits of the budget are known. Accordingly a budget sub-committee of the Executive Committee was appointed to visit DSDP and study the total budget and to recommend to the Executive Committee areas in which scientific priorities might be reviewed in light of budgetary constraints. The report of this committee has been reviewed by the Planning Committee and accepted by the Executive Committee. A summary of the recommendations of general interest is listed.

1. Reentry cones should be budgeted on a more constant basis to ensure the scientific program is not jeopardized and to even out major equipment procurement fluctuations in the budget.

2. Logging has not been given adequate priority to meet JOIDES recommendations.

The Executive and Planning Committees have responded to this report by proposing the following:

A. A budget of $300,000 per annum (in-house) is required for downhole logging.

B. This money should be released immediately to be used on sites 2a, the Moroccan basin, and PAC 4.

C. A cost analysis of downhole logging should be made in close consultation with DSDP Chief Scientist Dave Moore. The analysis would include:

a. estimated costs using outside firms (equipment and operations),
b. estimated costs of DSDP in-house development (equipment and operations),
c. estimated costs of in-house procurement of equipment with operations contracted to outside firms,
d. estimated costs of in-house hardrock logging and contracting out sediment logging, and
e. other possible combinations.

D. It was also urged that DSDP seek from NSF additional funds for logging.

3. It was suggested that $25,000 be allotted for a complete study concerning:

a. costs of GLOMAR EXPLORER as compared to the CHALLENGER in two modes (single wall vs. riser systems),

b. conversion and operating costs and,
c. a list of advantages and disadvantages of each mode in terms of scientific results.

4. It was recommended that an increase in the budget be made to purchase a) 3.5 kHz system, b) adequate ship's speed log, and c) air gun systems. It was further suggested that the air gun be traded for logging and a report be obtained on the status of the condition of the air gun and sonobuoy system aboard the CHALLENGER.

5. The whole site survey problem needs to be resolved including non-U.S. participation. More than likely this will require additional funds. It was suggested that the Site Survey Panel consider the recommendation by the Planning Committee to establish a regional studies program, and report to the Planning Committee.

6. The JOIDES Executive Committee should support strongly a request from DSDP to NSF for the procurement of 20,000 ft of new drill string. This is a major item estimated at $600,000. Hopefully, a Global Marine obligation to purchase 3700 ft of drill string owed will also be met.

7. JOIDES should attempt to determine the total cost of deep sea drilling both within the U.S. and without. This would allow for a much better evaluation of input to DSDP for the program.

8. The East Coast Repository and staffing problems need to be resolved. An ad-hoc committee was appointed by the Planning Committee to examine the present policy under which the repositories operate and suggest changes it deems appropriate.

REPORT FROM THE PLANNING COMMITTEE (18-21 April and 6-8 July meetings)

Sample Distribution and Publication Policy

An ad-hoc working group presented a draft of a new Sample Distribution Policy to the Planning Committee which the Committee modified and accepted. The policy was also approved by the Executive Committee; final approval by NSF is pending. The final accepted Sample Distribution and Publication Policy will appear in the next JOIDES JOURNAL.

Site Surveying

The Planning Committee reviewed the site surveying situation and noted the following.

1. The OBS program so far has not been effective in providing data useful for site selection, particularly in view of the delay in getting final analysis of the data completed. Therefore, should OBS observations be reserved for a post-drilling phase of site surveying?

2. Are multichannel reflection surveys cost effective, particularly at deep ocean sites?

3. It has been suggested that the weakest aspect of previous surveys has been the lack of a closely-spaced grid of measurements in the close vicinity of the drill sites.

Every effort to resolve these problems is being examined.

Reference Centers

The policy and plans for reference centers were summarized. In order to proceed, NSF authorization is needed allowing a dispensation in the Sample Distribution Policy to these centers. The Planning Committee understands that there is no major budget issue involved in the establishment of these centers. Plans to proceed with the establishment of the reference centers were approved.

Gulf of California Working Group

In order that proposed drilling in the Gulf of California receive proper planning, a working group was established. The group should propose problems and appropriate sites for drilling, rank these in priority, and respond to the Planning Committee.

State of the GLOMAR CHALLENGER

It was reported that many of the re-occurring problems of ship operation can be attributed to poor quality over the last few refits. To counteract this, 5 instead of 2- to 3-day port stops will be planned to enable work to be done at the end of each leg. This will leave 51 sea days per leg. A more detailed reporting procedure of ship down time, equipment failure, etc. may be useful in future planning processes. A preliminary investigation of procedures used by the engineers in reporting the ship state is underway.

Site Survey Management and Site Survey Panel Relationship

It was suggested that a reorganization of the SSM/SSP relationship take place. An ad-hoc committee appointed to address the problem recommended that the Site Survey Panel add to its mandate assistance to Site Survey Management in proposal preparation and in evaluation of Site Survey proposals from interested persons.

The Planning Committee reaffirmed its position that the entire Site Survey Panel should continue to formulate the overall statement of Site Survey requirements. It was also suggested that a sub-panel composed of U.S. members should help Site Survey Management write proposals for U.S. funding and review U.S. proposals to use the funds.

Future Tasks of JOIDES vis-a-vis DSDP

It was suggested that no change be made at present in the way site survey management is done, i.e., retain sub-contract with DSDP. A suggestion that the logging program might be operated by a JOIDES institution seeking funding directly from NSF did not receive favorable response from the Planning Committee. It was also recommended that the JOIDES Office retain its present functions, that it move with the Planning Committee chairmanship (every two years) and that it receive financial support for a full-time coordinating scientist and secretary, and part-time Planning Committee Chairman.

Pollution Prevention and Safety Panel Review

The sites for Legs 49, 51 and 52 (Figure 2) were approved. Leg 50 (Moroccan Basin site) was approved so long as penetration was not continued beyond the lowermost coherent seismic horizon. There were no restrictions on the exact location of the site along the survey line. There must be a strong capability for petroleum

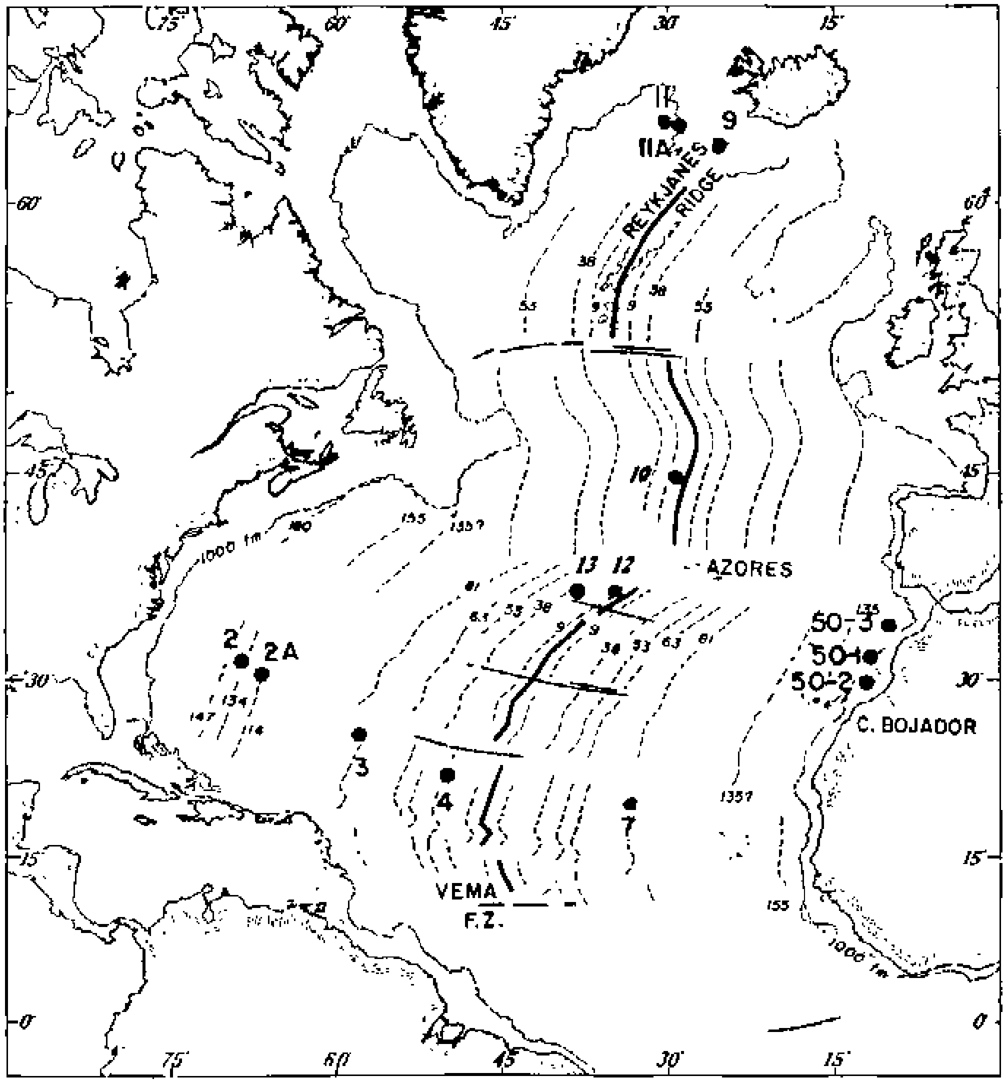


Figure 2. Atlantic Drilling Sites.

hydrocarbon monitoring on board.

The Blake Bahama basin site can only be drilled at the same location as was drilled previously.

A document was presented outlining responsibilities for preparing information needed for Pollution Prevention and Safety Panel review. The problem panel chairman, as ex-officio member of the Pollution Prevention and Safety Panel together with the co-chief scientists shall designate one person to be responsible for seeing that this panel receives adequate information on the sites well in advance of drilling dates.

On Board XRF and Routine XRD Analyses

An XRF facility will be on board for all crustal legs after Leg 50. Another proposal regarding XRD has been received which offers to analyse 50 samples per leg on a service basis. The Planning Committee understands that there will be no charge for this and recognizes that this will not replace the previous program at Riverside. This offer is being considered.

Ocean Crust Panel White Paper

The Planning Committee recommended that the OCP publish this white paper in a condensed form, relating the objectives to actual proposed sites.

Initial Report Article Referees

There are differing opinions as to whether or not the Initial Report articles should be reviewed. DSDP would appreciate having back-up reviewers who would be consulted on an ad-hoc basis. The names of the reviewers will appear at the end of the articles and the choice of reviewers will be given by the authors. This was also agreed to by the Planning Committee.

Drilling Program

More prudent use of available drilling ship time demands that we plan more time per objective, and schedule legs with like objectives contiguously. This will permit more flexibility in decision making regarding termination of a hole at the close of a leg or continuation of drilling at a given location of a subsequent leg. This should lessen some of the shipboard staffing problems associated with the types of expertise required as leg objectives change. To this end (see Drilling Schedule in this issue), Legs 50, 51 and 52 are planned to permit additional time for drilling the Moroccan Basin should this be required and assigning Legs 51 and 52 to Atlantic sites 2, 2A, 3, and 4 (Figure 2). This ordering will permit a quick change of ship's crew with little interruption of drilling should extra time be needed in the Moroccan Basin, but will not paralyze the objectives assigned to Legs 51 and 52. Should the Moroccan Basin drilling terminate early, the additional time will be assigned to Legs 51 and 52. Similarly, the first three Pacific legs (53, 54, 55) are assigned to sites Pacific 4, 5, 6, and 7, and the Emperor Seamounts (Figure 3). This permits comparison of Pacific and Atlantic spreading centers at an early date and makes a block of crustal objective legs contiguous. The previously planned paleoenvironmental leg in the Northwest Pacific is deferred to later to precede the Northeast Pacific paleoenvironmental leg.

If drydocking can be postponed to post Leg 56, a much better weather window is provided for Sea of Okhotsk-Japan Trench drilling. It is recommended that Leg 56 be a split leg between these two objectives.

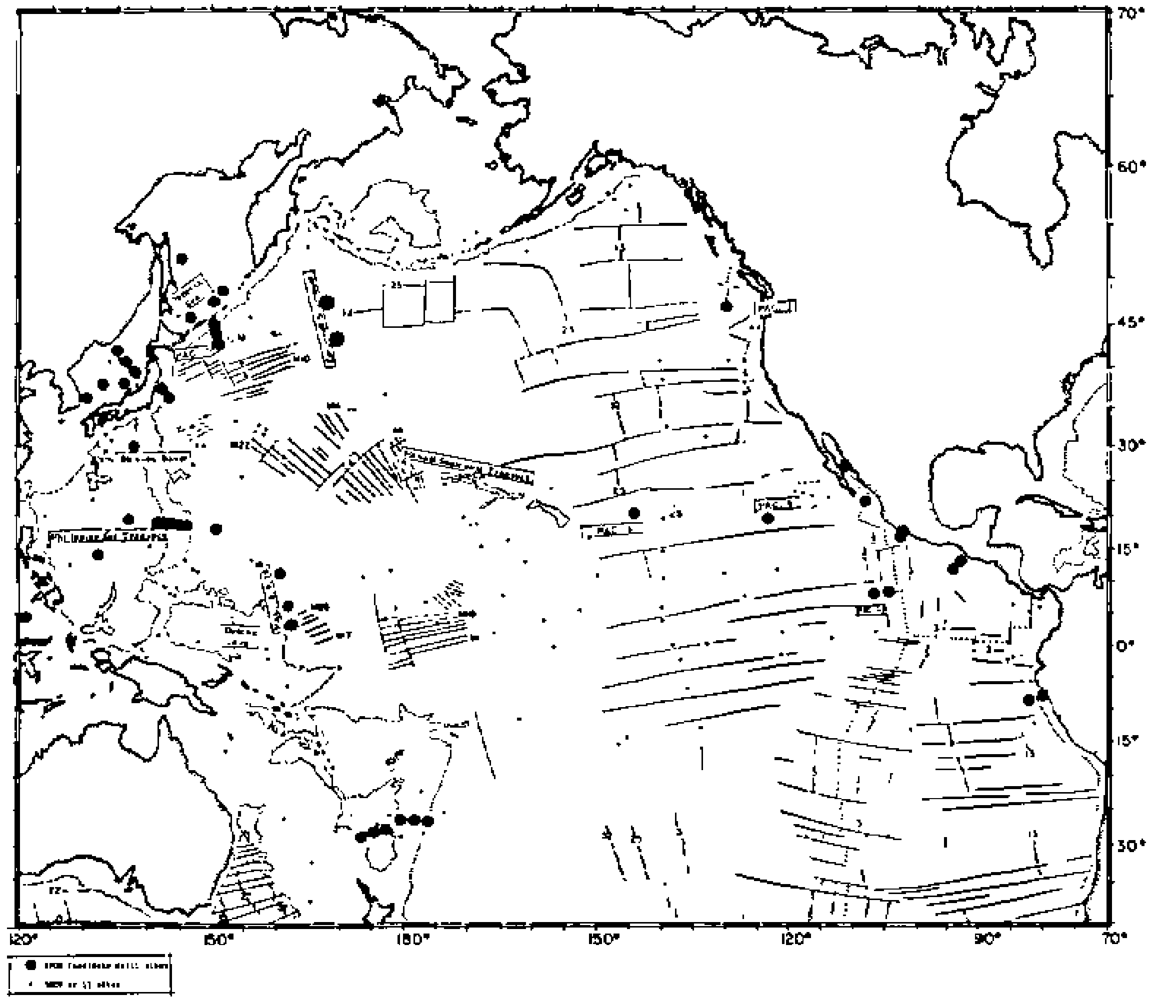


Figure 3. Pacific Drilling Sites.

The Active Margin, Site Survey, and Ocean Crust Panels are asked to consider the schedule through Leg 58 and the objectives previously outlined for these legs as now constituted as more firmly established than legs and objectives beyond Leg 58. The Planning Committee must reconsider drilling plans beyond Leg 58 with the possibility of extending IPOD Phase I for an additional two years. For now, the above panels are requested to finalize western Pacific drilling proposals previously identified as Priority I. Experience gained from recent Atlantic drilling suggests that we are underestimating drilling time required for our objectives. With the need for an additional two days in port between legs, this dictates the addition of at least one leg after Leg 59 in the western Pacific to complete Priority I objectives.

JOIDES Symposium

The opportunity to schedule a symposium in early 1978 on the Atlantic drilling results as the second Maurice Ewing Symposium was offered by L-DGO who would also support two-thirds of the cost. A formal reply will be made at a later date.

The Balance of Expertise and Nationality in Shipboard Scientific Staff

It was commented that more areas of specialized expertise, i.e., organic geochemist, physical properties, etc. needed to be recommended by the IPOD National Committees in addition to the more general scientific categories. A memo to this effect was sent to the national representatives.

Site Survey Cores

The Planning Committee suggested that if possible an unopened core collected during a site survey be transferred to GLOMAR CHALLENGER for opening and describing as part of the site collected core. At least half a core collected during a site survey will be placed in the DSDP repository and archived for study by the shipboard party.

National IPOD Structures

The Information Handling Panel requests descriptions of the structures of the non-U.S. IPOD organizations. The IPOD structures of Japan, Germany, and France have been briefly described in JOIDES JOURNAL No. 5. Reports are expected from the United Kingdom and the Union of Soviet Socialists Republic.

Early Divulgence of Drilling Results

The timing of bidding for petroleum concessions in the north Bay of Biscay area resulted in an extraordinary request by oil companies for the early release of Leg 48 data for sites 400-402 (Figure 1). A telegram was sent to the shipboard party suggesting procedures that they might follow.

Oil company requests have also been received for data from Leg 47 (Figure 1). If the initial core descriptions for Leg 47 are not out in time for the oil company deadlines, then the co-chief scientists will be contacted about the possibility of putting this data on open file.

In compliance with these requests, the initial core description data for Legs 47 and 48 is being put on open file at Scripps, Texas A&M, L-DGO, and at all foreign IPOD institutions of Planning Committee members.

REPORT FROM THE OCEAN CRUST PANEL (15-17 April meeting)

ICD

Leg 46 had an Initial Core Description ready for DSDP production at the end of the cruise. The panel awaits with interest to see how long it will take for final production and distribution. The ICD format has been greatly revised to better describe the basement samples.

Technical Problems

It was thought that the problems encountered in hole 395A arose because the dolerite layer at 630m subbottom appears to have bulged outward, reducing the velocity of the pumped water and allowing the chips to accumulate and fall back into the hole. A caliper log could have proven this hypothesis. Despite a large amount of cement being pumped into the hole, drilling was unable to continue. It was felt that more expertise in cementing was required.

The lack of a temperature sonde on Leg 45 was unfortunate.

During re-entry it is impossible on the first pass to know in which direction the cone lay relative to the ship. It is suggested that the reflectors be arranged in an asymmetric pattern to assist determining the orientation of the cone.

Hard Rock Core Recovery

The Los Alamos dry hole drilling was discussed. Their core recovery in hard rock is approximately 70% as opposed to approximately 25% by DSDP. They attribute the high recovery to a modified drill bit which has harder tungsten carbide inserts on the core shaping part, larger pads on the side to keep the bit centered in the hole, and the absence of a gap between the core-catcher and the drill bit. DSDP is already aware of this bit design.

It seems that approximately 500m of hard rock recovery per leg is probably all that can be expected. Thus, the OCP discussed whether or not the drilling plans should be changed to include more one-bit holes to maximize sample recovery. Deep holes, however, are needed for magnetic, structural and alteration investigations. A balance between deep and shallow sites was considered the optimum.

Drilling Recommendations

1. Leg 49 (Figure 1.). An ad-hoc meeting was held at L-DGO to look at the latest site survey data south of Iceland and locations and alternative locations for sites 9, 11, and 11a on the western flanks of the Reykjanes Ridge were chosen. Also programmed for this leg are sites 10, 12, and 13, the priorities for which were left to the discretion of the co-chief scientists.

At the full OCP meeting, it was decided that site 10 at 45^{o}N (Figure 1) should be a one-bit hole with possibly a cluster of 2 or 3 holes if there was time.

Site 12 at 37^{o}N on 10 m.y. old crust should be a re-entry site very close to site 334. Up to four one-bit holes would be desirable with one close to the ridge axis between site 332 and the FAMOUS Area.

Site 13 at 38^{o}N on 40 m.y. old crust should be a one-bit hole, with a cluster of three holes if time permits.

In the event of really bad weather the ship could proceed south to site 14 at 27°N or site 6 at 22°N, so that some type of longitudinal profile could be obtained.

2. Legs 51 and 52 (Figure 2). Site 3 at 23°N on 80 m.y. old crust should be a one-bit hole.

Site 2a on anomaly M17 south of Bermuda should be a re-entry hole with a pilot hole. This will be the first deep hole in old crust and has high priority.

Site 7 is low priority and is at 20°N on 80 m.y. old crust on the eastern flank of the Mid-Atlantic Ridge.

The lack of unit-by-unit correlation of nearby holes on Legs 37, 45 and 46 has led the panel to consider that the individual flows are ribbons only a few hundreds of meters wide. If the clusters of shallow holes on Legs 49, 51, and 52 continue to show this lack of correlation, the local variability problem will be considered "solved" and multiple holes will not be proposed for further sites (except for specific hydrothermal circulation studies). Trace elements have been found to be consistent from site to site, despite different thicknesses of lava flows; major element chemistry, however, is more varied.

OCP Meetings

Future Ocean Crust Panel meetings will last for three days, with the first day scheduled for subgroup meetings concerned with various specific topics, which will report to the entire panel on subsequent days. The last Ocean Paleoenvironment Panel meeting was organized in a similar way.

Pacific Drilling Program (Figure 3)

The Pacific drilling objectives remain basically unchanged from those reported in the OCP Minutes of 12/75 and JOIDES JOURNAL No. 1975/3. The Panel, however, is anxious that the plan remains suitably flexible so that the Gulf of California, Juan de Fuca and Galapagos sites can still be considered options. Site Survey data will be studied to decide where the best seamount sites are, and where sites PAC 8, 9, 10 and SPI should be placed to best achieve the objectives of both the OCP and Ocean Paleoenvironment panels, and where on the Nasca-Pacific plate a good site on fast spreading crust may be found.

The high priority Pacific sites, where it is hoped to compare fast spreading Pacific crust to the slower spreading Atlantic, are PAC 4 near the Siquieros fracture zone, K1 near the Kurile trench and PAC 8 in the Nauru Basin.

OCP Requests

The panel requests that sample bottles for collecting downhole water for geochemical studies be designed by DSDP for use during Pacific legs.

Contingency Sites

A selection of seamount sites in the Siquieros and other near ridge-crest areas will be made as contingency sites to utilize any small amounts of ship time. Reflection records will be scrutinized to locate suitable sites, preferably on well-defined magnetic lineations to compare the age of seamounts with the surrounding ocean crust.

Hard Rock Sample Distribution

The problems regarding the restriction of samples should soon fade away as more Initial Reports are completed and rock samples become openly available. This is of special value to those studying regional and/or global problems.

The more interpretative work done on board ship, the easier sampling for shore-based work becomes. For example, at site 395A, 12 distinct units were identified, hence, only 12 samples were sent to the laboratories for special studies. It is recommended that adjacent samples from a "type section" of each flow be taken, so that isotopic, etc. studies are as directly comparable as possible.

REPORT FROM THE ACTIVE MARGIN PANEL (5-7 April)

Referees for Initial Reports

The panel had been approached by one of the editors at DSDP requesting a list of potential referees for Initial Report articles. The panel, being in accord with the concept that these articles should be refereed, provided a list suitable for active margin articles.

Downhole Logging

Downhole heat-flow measurements would be particularly useful in studying rheological and other processes controlling the behavior of the arc-trench regime. Thus, it is recommended that the possibility of acquiring a Japanese quick-thermal conductivity meter be investigated. The panel also pointed out the need for operational heave compensation to increase the resolution of downhole surveys.

Need for Shipboard Computer

The panel enumerated specific uses for an on-board computer, these are:

X-ray fluorescence analysis
Cryogenic magnetometer
Sonic velocity meter
GRAPE
Gas chromatograph including C-N-H analyzer

Second priorities are:

Thermal conductivity
Natural gamma radiation (in conjunction with downhole logging)

Mediterranean-Caribbean Working Group

The AMP reaffirmed its interest in drilling the Caribbean Sea transect, particularly the Venezuela Basin, Granada Trough and the Barbados Ridge.

Site Survey Requirements

Japan Trench/Okhotsk Drilling. The panel recommends that Leg 56 be split into two separate halves, one concerned only with the Japan Trench sites and the other with the Sea of Okhotsk-Kurile transect. They request that additional site survey seismic reflection cross lines be run in the Japan Sea in the vicinity of proposed sites J1 and J2.

Shikoku Basin. Additional bathymetric and magnetic data have already been obtained in the vicinity of NP2 and NP3 (Figure 4). High-resolution multichannel data together with refraction information may be needed to define the nature of the basement and to determine whether intercalated lava flows and sediment are present. The panel strongly recommends additional detailed surveys including dredge hauls between sites NP2 and NP3. More data are also required between sites NP4 and NP5 in order to locate these sites more precisely.

Okinawa Ridge and Trough and East China Sea Shelf. After analysis of a multichannel line with velocity analysis across this region, the panel recommends location of the sites in areas where the basement is shallower. Very detailed surveys and additional multichannel data, especially cross lines, are needed to demonstrate the lack of structural closures in this area. Additional dredge hauls are needed to identify the nature of the apparent igneous basement outcrops.

South Philippine Sea Transect. The panel is pleased to note the numerous on-going surveys in the South Philippine Sea and Marianas Arc-Trench region by HIG, Scripps and L-DGO. It is anticipated that these surveys will provide the data requisite for more firmly locating the provisional sites. The panel anticipated that the Parece Vela Basin would be difficult to survey. A thin sediment cover overlying a thin 3.5km s^{-1} layer is required here in order to meet the objectives of the panel. It is searching for a window where layer 2a is absent so that the true basement may be penetrated and its age determined, especially in the West Philippine Sea.

OCP Site

The location of the OCP site at the eastern end of the Philippine transect was discussed. The objectives of this site are twofold:

1. To sample igneous rocks going into the trench, and
2. to sample and date the pre-seamount oceanic crust in this vicinity.

It was therefore agreed that the site be located on the regionally deepest seafloor away from the alkalic crust of the seamounts, and that no extreme divergence from the line of the transect be anticipated.

AMP Priorities

Priority 1: Kurile, Japan, Middle America trenches, and Philippine Sea and Sea of Okhotsk.

Priority II: Caribbean transect, New Hebrides trench-ridge (based on new data presented to the panel), Tonga-South Fiji transect.

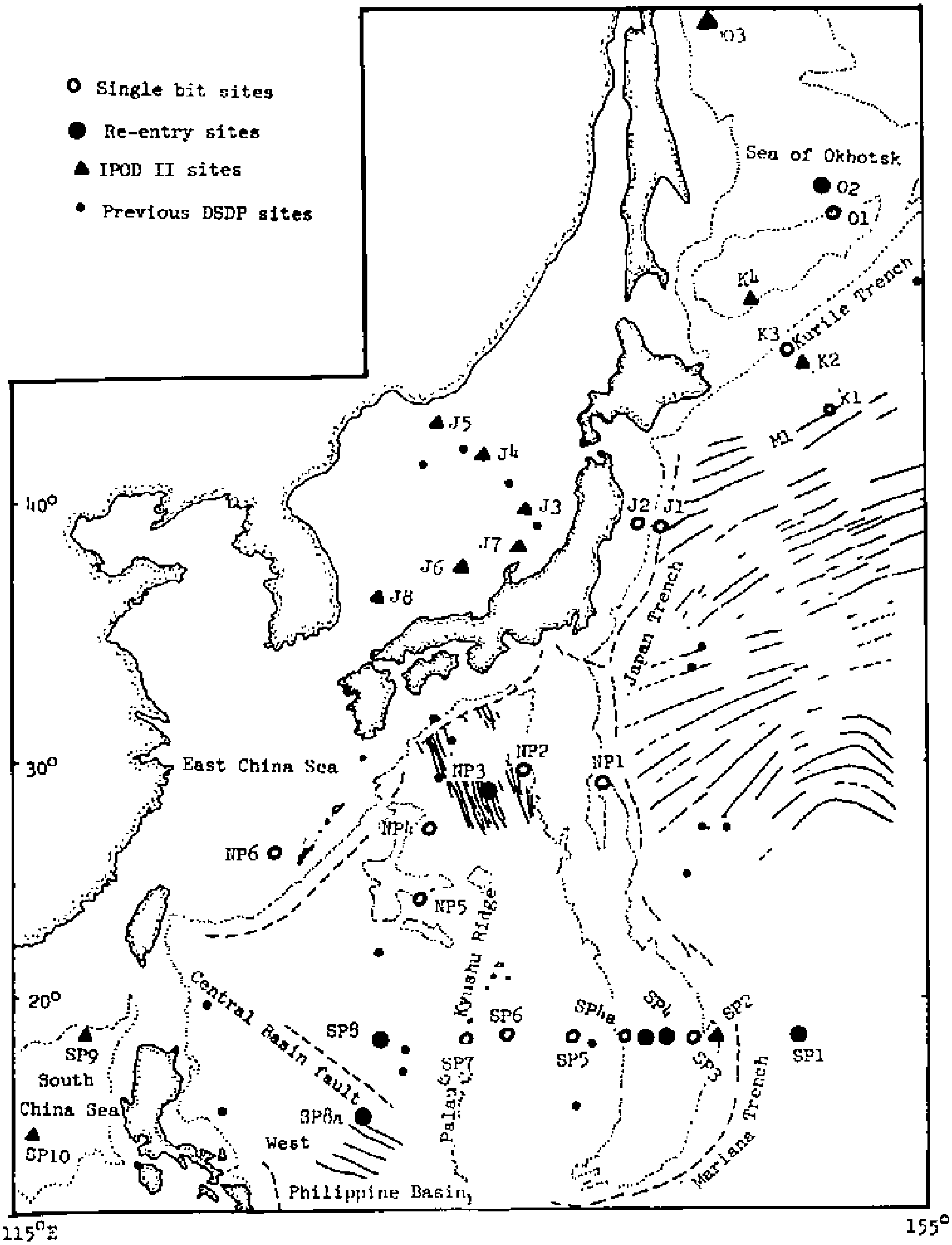
Site Survey Requirements

The AMP listed its site survey requirements as being:

1. A minimum of two or three parallel or sub-parallel regional lines within a 60-mi wide belt connecting all sites along a transect and, thus constituting a regional survey.

2. Where the transect consists of aligned, closely spaced sites, the survey should progress from the regional to the detailed grid, utilizing less costly (i.e., less sophisticated) to more costly survey techniques.

Figure 4. Proposed IPOD drill sites in the N.W. Pacific



3. In areas of thick or highly deformed thick sediments, or problematical acoustic basement, survey grids should show lack of structural closure and confirm the scientific merit of drilling there.

Situation	Science	Safety
< 500m sediment	1, 6, 7, 8	1, 2, 3, 4, 6, 7, 8
> 500m sediment	2, 3, 6, 7	2, 3, 4, 5, 6, 7
Deformed deeply buried sediments	2*, 3, 6, 7	2*, 3, 4, 5, 6, 7
Basement type (sediment vs. igneous)	2, 3, 4, 6	

Site Survey Techniques

1. single channel reflection
2. multichannel reflection
3. refraction (OBS-sonobuoy)
4. magnetics
5. gravity
6. coring and dredging
7. heat flow
8. bottom photography

*closer spaced grid lines required

Recommendations to Site Survey Management

The AMP recommends that the function of the Site Survey Management data bank be expanded to include compilation of the data into a standard format consistent within a site survey package with the provision of copies of this package as required. Every effort should be made to arrange meetings between the survey principal investigator, the co-chief scientists and the representatives from Site Survey Management as early as possible in order to coordinate site survey results. Appropriate funds are needed for this effort.

REPORT FROM THE DOWNHOLE MEASUREMENTS PANEL (16 April)

Downhole Work on Leg 46

Results of the heat flow, bottom hole hydrophone, downhole geophone and logging programs were summarized from Leg 46. Technical and operating constraints showed that more care should be taken in the choice of the temperature and caliper logs. Work on analysis of Leg 46 electrical and density logs, along with interpretation was offered.

Plans for Legs 48, 49 and 50

Leg 48 will have a logging capability arranged by U.K. A berth is reserved for a logging engineer on Legs 49 and 50 and a logging program is recommended for both these and subsequent legs.

Los Alamos Hot Rock Drilling Program

D. Brown and F. West reported on the downhole logging and experiment program undertaken for geothermal purposes by Los Alamos Scientific Laboratory. A do-it-yourself program was shown to be financially advantageous and very flexible. An invitation was extended for panel members to visit their operation. They also recommended that the Bureau of Mines Information Circular 8627 contains much useful information on logging.

The Logging and Downhole Measurement Program of DSDP

After considerable discussion and research on this subject, the panel strongly recommends that 1) the project get its own staff of geophysicists/engineers to take the logging data at sea, maintain equipment and do initial data reduction and handling; and 2) the project will eventually want to own its logging instruments, but should initially lease them until familiar with the good and bad characteristics of each;; (This may include temperature and heat-flow instruments) and 3) guidelines be established for the most economic use of ship time for logging.

Downhole Experiments

A report was given of the oblique seismic experiment attempt on Leg 46. It was recommended that the Cambridge group be encouraged to attempt the experiment again in the Atlantic in older crust where deep penetration may be more likely. Site 2A in the western north Atlantic would seem to be the best site. A hydrofracturing experiment was discussed. It was decided to 1) evaluate the pack-off and overpressure capability of CHALLENGER, 2) estimate how much time such an experiment would require, 3) where it might be, and 4) evaluate the scientific information that hydrofracturing would yield.

The possibility of having instruments in holes was discussed Such experiments are attractive because they do not use CHALLENGER time, but the readout would involve complex logistics.

Action Between Meetings

1. The OCP should be asked to review logging tools to be routinely used for igneous rocks and the Sedimentary Petrology and Physical Properties Panel to review other logging tools.

2. Files will be reviewed to see if general recommendations to chief scientists regarding logging do not already exist.

3. It will be considered how to: 1) draw attention to the present logging and downhole experiment program on CHALLENGER and, 2) inform the scientific community of possibilities of adding to their geological and geophysical knowledge through other downhole projects.

4. It will be considered whether some future leg of CHALLENGER should be devoted exclusively to downhole experiments.

5. A review of the literature available through the SPWLA (Society of Professional Well Logging Analysts) may be useful in acquainting the shipboard scientists with the logging terminology and technology.

REPORT FROM THE ORGANIC GEOCHEMISTRY PANEL (23 May)

1. The sample session of 17 December 1975 was summarized and copies may be obtained from the JOIDES Office upon request.

2. Shipboard instrumentation.

a. A proposed modification of the Hewlett-Packard gas chromatograph to permit the analysis of both gas and gasoline range hydrocarbons through the use of a capillary column was discussed. The outcome was that W. E. Harrison be asked to document and describe in detail his suggested modifications. He is also to be invited to the next meeting.

b. Gas chromatography. Hunt pointed out that three gas chromatographs are presently available on the GLOMAR CHALLENGER: 1) Exploration logging, 2) Hewlett-Packard, 3) Carle. All instruments serve useful functions.

c. CHN analyzer. It was reported that the results obtained through the CHN analyzer are suspect because of inaccuracies in weighing, sample homogenization and removal of carbonate.

d. The Pyrolysis-Fluorescence technique is now being used routinely on the GLOMAR CHALLENGER. The combined information given by GC and PF is most valuable.

e. Pyrolysis-Flame Ionization Detection (PFID). The instrumentation will be available and marketed in the near future. The data resulting from this determination leads to a classification of organic matter and an assessment of the oil and gas generation potential of sediments. The instrument is being used on Leg 48. The panel was advised that the instrument could be available for Leg 50, but a problem in providing a technician for operation would exist. The panel agreed to evaluate the PFID results and recommend to DSDP/IPOD whether or not this should be included as a routine instrument.

f. Miscellaneous comments.

1. A subpanel be set up to keep track of instruments. This function should continue to be the responsibility of the entire panel.
2. On very sensitive legs two slots might be allotted for organic geochemists.
3. The difficulties involved in trying to predict gas concentrations ahead of drilling along with the ambiguous results often encountered in gas analysis made during conventional drilling was reaffirmed.
4. The time may come when the ship cannot be staffed properly with qualified geochemists. A possible solution to such an eventuality would be the selection of an individual or group of experts to whom results could be telemetered for immediate interpretation.
5. At the next sampling session, a technical session should consider instrumentation and interpretation of shipboard acquired data.

3. Leg 47a. The geologic setting and kinds of analysis performed on samples was described. Uncertainties in the interpretation of PF data and the need for better interpretive tools was stressed. PFID might provide a better measure of active carbon. Fluorescence was determined on some samples from the core catcher. The Turner Fluorometer was used to back-up measurements of fluorescence on whole cores. Gas analysis showed wide fluctuations at the top of the hole. Drilling was stopped when CH_4 to C_2H_6 equalled 380:1 below an unconformity. In the lower part of the

hole, analysis of individual hydrocarbon C_2-C_5 showed parallel trends in concentrations. This was interpreted to indicate that the sediments contain both diagenetic and migrated hydrocarbons.

4. Frozen Samples, Legs 47a, 47b, and 48. Frozen samples were collected and stored in the ship's freezer. Every effort will be made to transport these samples from Scotland in July 1976. Sampling guidelines of taking one-sixth of a core section every two cores in geochemically interesting sections are being followed.

5. Status of Manuscripts.

a. It was requested that papers be received by 15 August 1976.
b. There are eight contributors to the pre-initial report for Leg 44. The compilation of papers was sent to DSDP with the understanding that the information would be made available to interested parties.
c. The panel was encouraged to meet deadlines for all other leg reports.

6. Riser in Future DSDP/IPOD Drilling.

The conclusions of the panel report were informally presented to M.N.A. Peterson. An alternate plan was suggested for a future drilling program. In this plan, DSDP would provide a sophisticated laboratory ship which would utilize commercial drilling ships located in the geographical area of interest.

7. Participants in DSDP/IPOD Programs.

a. The panel was asked to encourage further on-shore studies by acquainting others doing relevant research with the DSDP/IPOD organic geochemistry program.
b. A memo from the Planning Committee chairman recommended that "the organic geochemist chosen for each of the margin drilling legs should be someone with oil company experience and suitably qualified to make the responsible decisions necessary for the safety of the ship". The panel felt that this guideline is too restrictive. Oil company experience does not necessarily insure proper judgement regarding safety problems. Therefore, the panel felt that the guidelines should not specify oil company experience but instead specify "broad experience in hydrocarbon geochemistry".

REPORTS FROM OTHER PANELS

The OCEAN PALEOENVIRONMENT, SITE SURVEY, POLLUTION PREVENTION AND SAFETY, PASSIVE MARGIN, STRATIGRAPHIC CORRELATIONS, SEDIMENTARY PETROLOGY AND PHYSICAL PROPERTIES, INFORMATION HANDLING, and INORGANIC GEOCHEMISTRY panels have not met since the meetings summarized in JOIDES JOURNAL 1976/2. Future meetings of these panels are given in the Panel and Committee Calendar appearing at the end of this issue.

SELECTION OF SEA-GOING SCIENTIFIC PERSONNEL*

Scientists on the various cruises operate as individual teams and should encompass the necessary disciplines for their leg. In charge of each leg team are co-chief scientists or a chief scientist. At least one of these should have sufficient experience in marine geophysics to evaluate drilling objectives in the light of

*Takenfrom Program Plan-International Phase of Ocean Drilling, Deep Sea Drilling Project, Contract NSF C-482, p. 157-160.

available profiles from site surveys and from the geophysical equipment on the drilling vessel. In general, the three main groups of microfossil study should be represented, as well as experts in sedimentary petrology and, where appropriate, igneous petrology. Emphasis will shift in accord with cruise objectives.

The scientists are chosen based on their interests, fields of research, scientific reputation, availability, and leadership qualities. Coordination with the scientific advisory panels will help assure that scientists who have recommended sites and scientific problems will be given an opportunity to participate in cruises that will be drilling those sites or scientific problems areas, if the other criteria are also met.

Recommendations for participation are requested widely in the scientific community, including agreed mechanisms for non-U.S. participation. Files are established to review the scientists' qualifications and reputations. Cruise co-chief scientists or chief scientists are appointed by the scientific administration within the Project, in close consultation with the scientific community and with an advisory committee established by the Project Chief Scientist from senior scientists and personnel within SIO and the Project, in accord with international agreements.

DSDP will work closely with the appointed chief scientists of the legs in the assembly of their scientific teams, following the broad staffing plans considered necessary by the Project and with due regard to and control of budgetary considerations, and in accord with international agreements.

POLICY TO GOVERN PARTICIPATION OF NON-U.S. SCIENTISTS IN IPOD OF DSDP

a. For purposes of this policy statement, "non-U.S. scientists" shall refer to foreign nationals normally living and being professionally active outside the United States. Specifically excluded from this category are scientists who are immigrants or registered aliens who are in the United States on some long-term residency basis. United States citizens permanently abroad will be counted as non-U.S. scientists in recognition of their foreign institutional representation.

b. Two basic categories of non-U.S. scientists are recognized: 1) those from countries with which there exist international agreements and 2) those from other non-U.S. countries.

Category (1) participation shall be determined, in quantity, by international agreements. Working mechanisms by which category (1) scientists are brought to the attention of the Project will be developed and tailored to the individual needs of the participating countries. Payment of salary and travel will be in accord with international agreements.

It is expected that category (2) scientists will not participate in abundance, nonetheless, important knowledge or national representation will make their participation very desirable on a somewhat limited basis. Two types of category (2) scientists are considered: a) scientists who volunteer to participate and are judged to be highly qualified to contribute to the program, and b) scientists who are selected by the Project management because of a special contribution they can make to the program. In the former case, it is expected that all travel and salary expenses will be paid by the scientist, or his home institution or country. In the latter case, all expenses may be charged to the contract.

c. Quality, balance, and special knowledge will be the prime factors in the selection of the scientific teams, in a manner consistent with international agreements.

d. The National Science Foundation will be kept fully and currently informed concerning participation of foreign scientists.

e. Whenever it is necessary to obtain assistance or advice from the Department of State, the National Science Foundation will be asked to bring the matter to the attention of that Department.

f. Beginning with IPOD, non-U.S. scientists may comprise up to 50 percent of the total scientific staff and up to 50 percent of the co-chief or chief scientists. Any departures from this must be approved by the NSF before rosters are considered final.

PREPARATIONS FOR SAFETY PANEL REVIEW BY CO-CHIEF SCIENTISTS AND OTHERS RESPONSIBLE FOR SITE DOCUMENTATION

Documentation of drill sites for the Safety Panel review is a complex procedure which varies from Leg to Leg. Enclosed are general instructions for documenting these sites. They serve only as a guide to acquaint you with the overall scope of the review.

Preparation for Safety Panel review entails two levels of documentation. One level, less complete in its scope, is mailed out to all members of the JOIDES and SIO Safety Panels approximately two weeks preceding a formal review meeting. The purpose of this documentation is to acquaint them with the location, setting and possible safety problems which may exist at each site. It further allows individual panel members time to research their own files or the literature on hydrocarbon hazards at various drill sites.

The second level of documentation is for the formal safety review. At this level no effort should be spared in compiling data of all possible significance. These panels have been reluctant in the past to approve a site where data, positive or negative, has not been provided. The third revision of the JOIDES Safety Manual is even more emphatic on this point. Avoiding reference to negative data can be a greater deterrent to panel approval, than bringing such data in the open where its merits can be judged relative to the overall safety aspects of a site.

Following is an outline of the type of information desired for each of the above levels of documentation.

Documentation for mailout to safety panel members

I. Required Items

A. Cross-tie seismic reflection lines. Should be of sufficient length and detail to define all possible elements of closure. The following annotations should appear on these lines.

1. site number and its location
2. direction of traverse
3. horizontal scale in kilometer
4. vertical scale in seconds
5. major course corrections
6. important reflectors and their identification
7. intersection point of cross-tie lines

B. Track chart showing track lines and location of proposed site. The specific lines or segments of lines submitted for review should be indicated.

C. Small scale regional map showing bathymetry, nearest land area and location of proposed site. One map may serve for all sites.

D. Completed safety check list.

E. Leg prospectus.

Additional Remarks:

The seismic events on the profiler lines should be legible at least down to the depth of penetration proposed for the drill site. Keeping this qualification in mind, this data can sometimes be presented on photographic prints. When such prints are used suitable negatives together with annotation instructions should be sent.

The Leg prospectus should include a separate page for each drill site detailing site number and coordinates, water depth, drill penetration, priority, reference profiler record, sediment type, distance from land, objectives and comments. All measurements should be in metric units. Under sediment type, as much information as can be subjectively defined here will help to evaluate source and reservoir rock potential at the drill site. Where possible, an interpretive stratigraphic column could be constructed. Potential source and reservoir rocks should be indicated. This information appears again in abbreviated fashion on the safety check list.

Documentation for formal safety panel review

I. Required Items (necessary for all sites)

A. Reflection Profiler Data

All such seismic lines as may be thought necessary to justify and defend a site should be brought to the review meetings. In the event a panel recommends moving a site location, it is useful to have sufficient additional seismic data to support the new location. Documentation should also be provided for any alternate locations that could conceivably be drilled. It is not unusual to have the shipboard party select a new site while at sea because the geological results encountered differ from those which were anticipated. Whatever sites are submitted, the panels cannot be expected to approve a depth of drilling penetration below the depth of resolution of geological structure on the profiler records.

B. Seismic Refraction, Gravity and Magnetic Data

Judgement should be used as to when such information may be necessary to the interpretation of geologic structure or specific stratigraphic units.

C. Bathymetric Data

At deep water open ocean drill sites small scale bathymetric maps having a contour interval of 0.5 or 1.0 km will suffice. However, at continental margin sites, a smaller contour interval is necessary.

II. Desirable Items (useful mostly for active and passive margin sites)

A. Regional Geologic Map or Cross-Sections

For sites whose anticipated stratigraphic sequence can be compared with nearby onshore or other drilled sequences, a surface geologic map and/or cross-section would be useful in evaluating a site. Where available, source or reservoir rock data should be included.

B. Hydrocarbon Occurrences

Occurrences of hydrocarbons or lack thereof at nearby boreholes should be tabulated where oil companies are willing to release such data.

C. International Jurisdiction and Extent of Nearby Oil Leases

Self-explanatory.

D. Other Site Survey Data

1. Lithologic descriptions of piston core or dredge samples recovered near the drill site.
2. Bottom water analyses for the presence of hydrocarbons. At times these can be collected from piston cores.
3. Heat flow measurements.

E. Other Maps

Structure contour maps can be extremely useful. Of further value are isopach, depth to basement and depth to clathrate layer maps. For critical sites such maps are a requirement.

Additional Remarks:

Many of the above items of documentation are part of the package of information requested by Site Survey Management (see IPOD Site Survey Guidelines, November 1975) for submission to their archives. Consequently, their compilation should not prove to be too onerous.

For items IIB and C assistance may be requested from DSDP. However, this does not absolve a participant of responsibility for doing what he can to obtain this data. This remark is specifically pointed at participants who in the course of their work or because of geographic proximity have easier access to data than DSDP personnel in La Jolla.

SITE REPORTS (Figure 1)

Complete summaries of sites drilled are given in the DSDP monthly reports.

Leg 47A.

The GLOMAR CHALLENGER left Las Palmas, Canary Islands and terminated at Vigo, Spain on 12 April 1976. During that period, two holes at site 397 off of Cape Bojador were drilled with a resultant bottom penetration depth of 1453m, a new single bit sediment penetration record.

Co-chief Scientists W. Ryan and U. van Rad report:

Site 39 Lat. 26°50.7'N; Long. 15°10.8'W; Water Depth. 2900m

1000+m of Neogene sediments were penetrated beneath the upper continental rise of northwest Africa off Cape Bojador. The hole was terminated with a plugged drill bit after retrieving 104 cores with a recovery of 584m. A second hole is being drilled to continue the section.

Lithologic Unit 1 (0-246m) is a nannofossil ooze and marl bearing six siliceous planktonic zones of Pleistocene to later Pliocene age whose establishment coincides with the onset of high latitude glaciation and intensification of the Canary Current. Lithologic Unit 2 (246-545m) is a highly bioturbated foraminifer bearing nannofossil ooze and marl of early Pliocene to late Miocene age with evidence of climatic cycles and pulses of dissolution. Sedimentation rates exceeding 80m/my of predominantly biogenic components attest to an anomalously high fertility. Lithologic Unit 3 (545-588m) is made up of repetitious interformational breccias that may comprise the deposit of a massive chaotic debris flow emplaced in the late Miocene sea. Lithologic Unit 4 (588-675m) is a nannofossil marl intercalated with sands and silts transported by downslope mechanism and traction currents active during the middle Miocene. Unit 4 is separated from underlying sandstone by a stratigraphic gap coincident with the erosional horizon denoted as reflector D-2 of Seibold and Hinz. The sandstones of Unit 5 extended from 675-810m and include volcanogenic conglomerates with flattened rip-up mud pebbles derived from emerging Canary Seamounts. The commencement of the volcanic activity is biochronologically dated at 16 my.

The lowermost Unit 6 contains numerous mud flows from shallow regions of the African Margin including faunal elements of the inner shelf. These debris flows are thought to be the expression of a major denudation phase which created the relief of the modern slope some time in the early Miocene.

A thermal gradient of 41.1^{O}C/100m has been measured corresponding to a heat flux of 1.3-1.5 heat flow units. Natural gases of both biogenic and diagenetic origins have been detected throughout the column and have been meticulously monitored. Paleomagnetic reversals are clearly registered and a recognizable sequence exists from the Brunhes into Epoch 5. The nature and age of the D-1 seismic horizon is being probed on the offset hole 397A.

Site 397A

Hole 397A penetrated 1453m of Neogene and Early Cretaceous sediments in approximately the same location as Site 397. Although the bit was still in satisfactory shape the hole was terminated because of extremely low penetration rate in Berriasian mudstones and in order for the GLOMAR CHALLENGER to make rendezvous at Vigo, Spain to commence Leg 47B.

Forty-three cores were taken below the 1000m depth of the original hole, bringing the total number to 52 for a total recovery of 242m.

Lithologic Unit 6 consists of 300m of numerous debris flows of Early Miocene age. Several rare early lithotypes are recognized in Unit 6, including graded calcareous biogenic sandstones, molluscan fragments, and thick pebbly mudstones with clasts of nannofossil marlstones and claystones. The ratio of autochthonous interbedded pelagic marls to allochthonous materials from the middle and upper slope and outer shelf is estimated as 1:10, indicating extreme unstability on a passive margin oversteepened by erosion of an underlying sediment wedge. Except for rare lenses of distorted Oligocene bioturbated chalk and one Turonian limestone pebble, all of the allochthonous components are of Miocene age.

The Neogene slump deposits directly overlie Hauterivian to Valanginian silty mudstones along a major erosion surface which can be traced upslope to Site 369, and corresponds there to the Maestrichtian to Eocene hiatus. The Early Cretaceous sediments (Unit 7) are mostly barren of calcareous foraminifera and ostracods but do contain coccoliths and nannoconids. One magnetic reversal was detected. Unit 7 facies is finely laminated, non burrowed and, in some sections, almost varve-like. It contains abundant quartz, mica and plant debris. Tentative interpretations point to pro-deltaic, high sedimentation rate environment in bathyal water depths of low energy and depleted oxygen; some aragonitic microfossil tests and molluscs (including ammonites) are present. The tectonic setting is one of progressive subsidence with no evidence of subaerial denudation.

Berriasian strata at the bottom of the hole can be traced on seismic profile to a level more than 3km below Aptian cored in the mid region. Timing of the mass wasting of this Mesozoic wedge is unclear due to the large stratigraphic gap between it and the overlying Neogene. Reflector D1 of Seibold and Hinz at Site 397 is equivalent to D23.

The scientific party of Leg 47A were impressed that the Mesozoic sedimentation is overwhelmingly terrigenous and the Neogene autochthonous rise surprisingly biogenic.

Evidence is present of selective migration of lighter hydrocarbon gases in volcaniclastic conglomerates and sandstones. Bottom hole temperatures indicate appreciable cooling of the formation by drilling fluids.

Leg 47B.

The GLOMAR CHALLENGER left Vigo, Spain on 13 April 1976 and arrived on 12 May 1976 in Brest France. Site 398D west of Portugal and south of the Vigo Seamount was drilled. The terminal depth of penetration was 1740m setting a new penetration record for re-entry sites (937m of relatively undisturbed sediments were recovered in 138 cores.).

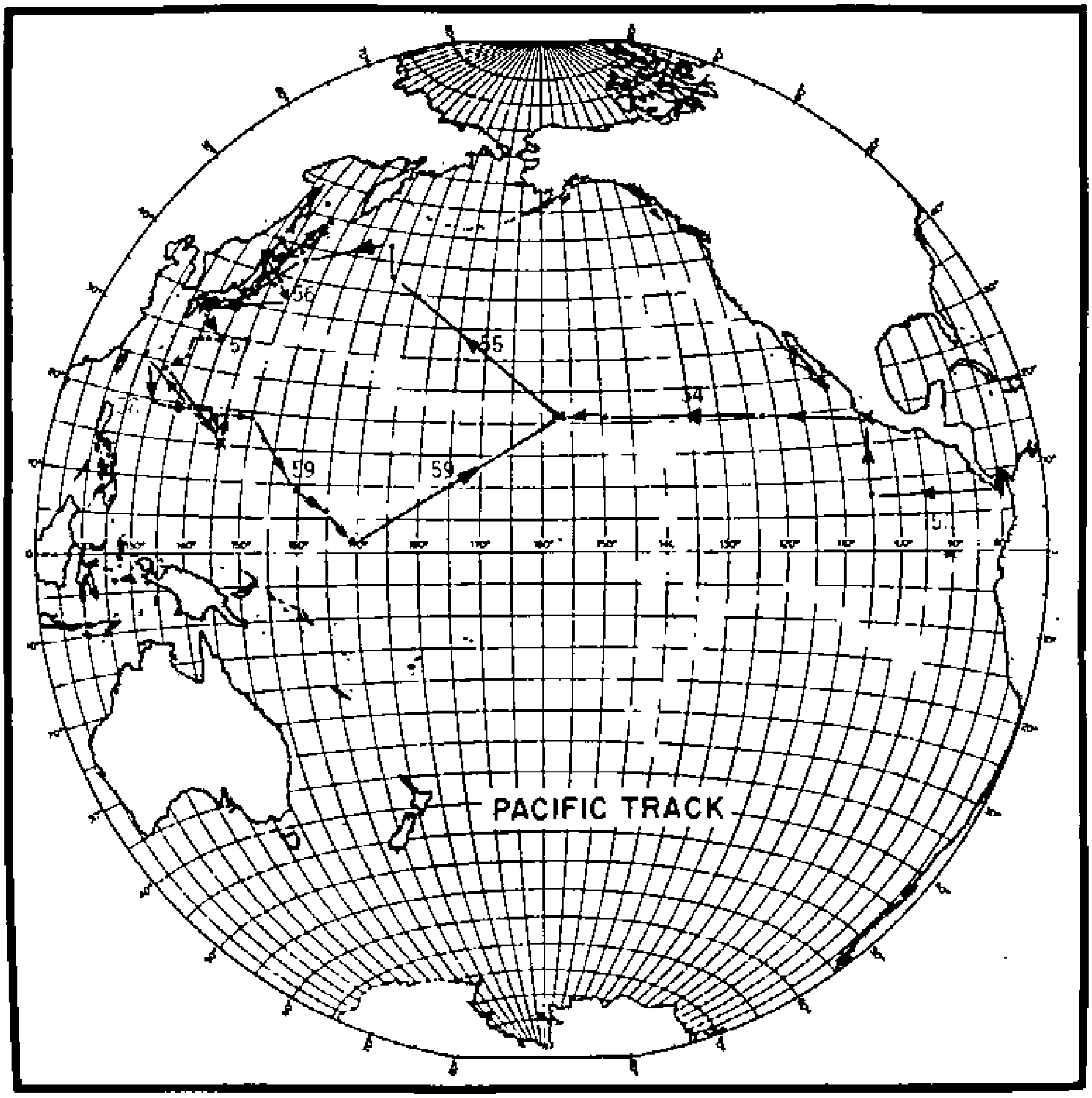
Co-chief Scientists W. Ryan and J. C. Sibuet report:

Site 398D Lat. 40°57.6'N; Long. 10°43.1'W; Water Depth. 3900m.

The deepest horizons penetrated transgress across acoustic basement and consist of mollusc-bearing bluish white bioturbated pelagic limestones intercalated in dark varved mudstones belonging to the Hauterivian Stage of the early Cretaceous.

Unit 4 consists predominantly of dark gray to black mudstones deposited under the combined influence of intermittent oxygen deficiency on the ancient sea floor and a persistent supply of fine grained clay into a distal setting either from the Wealden deltas of northwest Europe or those which built out across the Scotian and East Newfoundland Basins. This unit fines upward from 1684-945m. It begins in the Hauterivian Stage with a distal turbidite facies of calcareous marlstone debris flows and mud chip conglomerates and grades upwards into monotonous dark mudstones of Cenomanian age passing through Aptian and Albian dolomitic silt and gypsiferous laminated mudstones possibly derived as wind blown material from elevated coastal sabkhas.

Subunit 4A is a gray, olive green gray and black mudstone, in part dolomitic and zeolitic, rarely bioturbated and containing some organic sapropel. Activity of benthic organisms is more conspicuous towards the base at 322m where it passes into subunit 4B characterized by vuggy-textured stringers of dolomitic grapestone and pseudo-oolites, and tiny accretionary mounds, occasionally built upon cephalapod shells, which have the crenulated laminar structure of algal stramatolites.



PACIFIC TRACK
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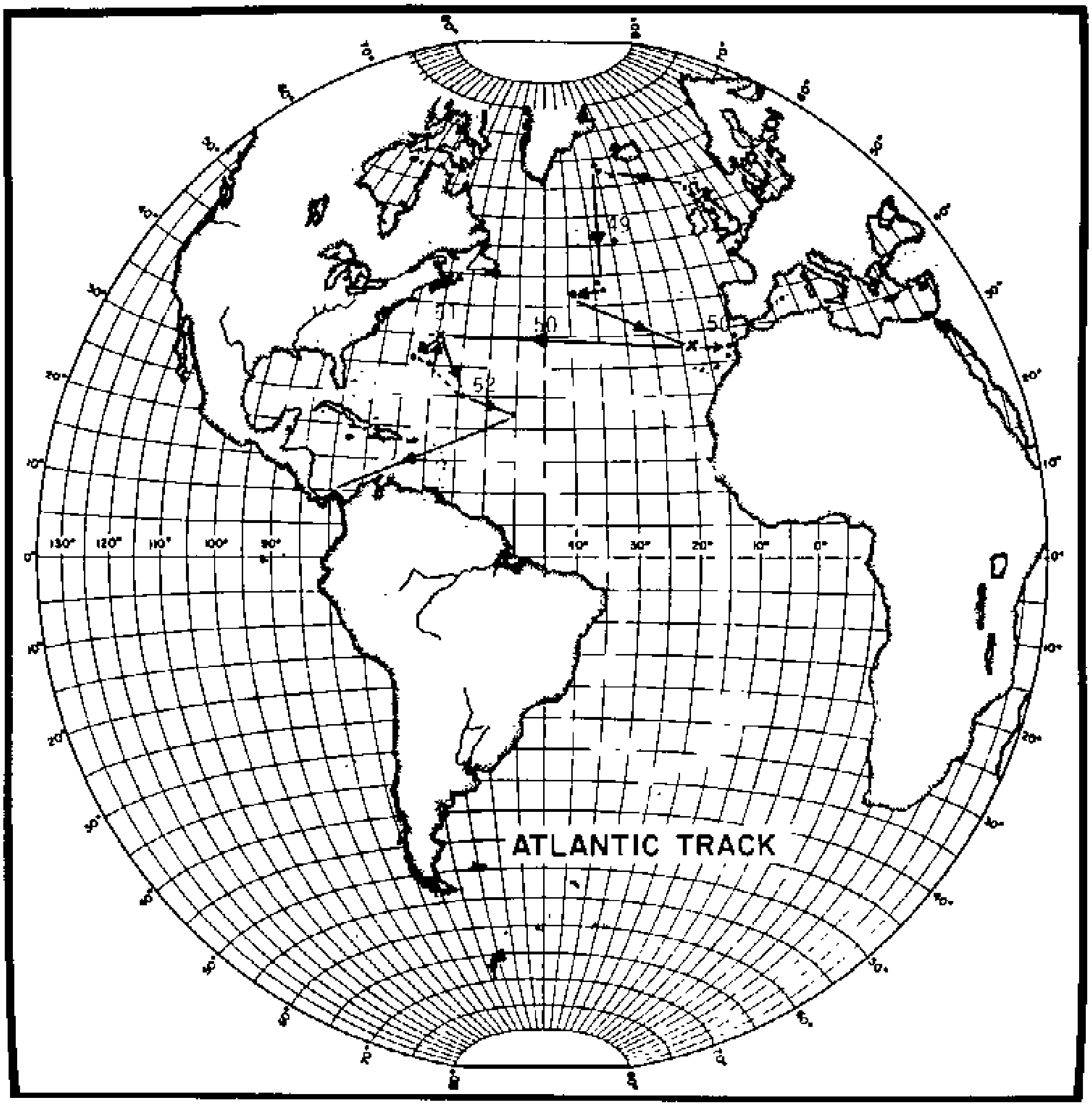
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Subunit 4C is a black and green gray mudstone distinguished by several meters thick massive debris flows whose clasts are light colored micritic and pelatoid limestones totally foreign to the radiolarian-bearing host sediment. Most of the clasts were emplaced as soft lumps from non-neritic and well ventilated upslope environments. Within a single deposit they span a stratigraphic range of ten to fifteen million years. Also abundant are graded sands and silts with plant fragments and palynomorphs, interpreted as deposits of interchannel interchanging areas of a prodelta slope or fan prograding across an epicontinental basin of intermediate water depth.

Drilling extended into lithologic unit 4 of Hauterivian age correlated to acoustic formation 4 and exhibiting onlap across the basement. Pelagic carbonates predominate and alternate with varied sequences containing up to 100 microlaminations per centimeter. Extreme detail of the sedimentary fabric is exhibited in these indurated rocks with compressional wave velocities reaching 3.5km/sec.

Initial impression is that broad epicontinental seaways interconnected the European Lusitanian and Barents-Aquitanian basins, with counterparts on the Grand Banks sharing some of the same early Cretaceous euxinic episodes as the deeper abyssal plains and mid-oceanic ridges to the South.

Sediment thickness, facies and fauna point to a rapid foundering possibly as young as the Albian with the drill site substantially below the CCD definitely by Campanian time. A bewildering proliferation of radiolaria in high sedimentation rate terrigenous mudstones poses questions of whether this faunal group represents a particular adaption to an enrichment of nutrients during the deepening of the oxygen minimum layer or whether they reflect an euryhaline response to the huge expansion of early Cretaceous deltas.

Leg 48.

The GLOMAR CHALLENGER departed Brest, France on 22 May and arrived at Aberdeen, U.K. on 13 July 1976. Original plans were to drill a re-entry site (400A) and a few shallow penetration cores. Loss of the drill string at 400A prompted an alternative plan to be implemented which included more shallower sites on the nearby margin. As a result, sites 400-406 were drilled, turning a mechanical misfortune into a most efficient and contributing leg.

Co-chief Scientists L. Montadert and D. G. Roberts report:

Site 400 and 400A   Lat. 47°22.90'N; Long. 09°11.90'W; Water Depth: 4399m.

Core of Pleistocene nanno ooze cut in mud line prior to washing down to a depth of 74.5m in pilot hole 400. Re-entry hole 400A was drilled with continuous coring from 74.5-777.5m before poor recovery necessitated withdrawal from hole to check bit. Poor recovery may have been due to the constricting effect of the casing hanger. Re-entry made successfully in two hours, but shortly afterward entire drill string lost due to failure of pin on pup joint. Remaining drill string length is 15,000 ft and alternative shallower sites on margin being evaluated with this in mind. Deepest horizons penetrated were lowermost Aptian black shales and calcareous mudstones. Seismic Unit 1 consists of semi-consolidated marly nanno oozes with suggestions of rhythmic deposition passing down into nanno chalks close to the Pliocene-Miocene boundary. Lower part of Unit 1 consists of nanno chalks interbedded with greenish marls with increasing silica content downward. Base of unit 1 is hiatus between Early Oligocene and Middle Eocene. Seismic Unit 2 extends from Middle Eocene to Campanian with hiatus of about 7.5 my between brown nanno chalks of Late Paleocene age and brown to white Maestrichtian to Campanian chalks. Base of Unit 2 is a marked unconformity between Campanian chalks and Albian black shales. Alternative shallower sites being evaluated are designed to address the subsidence problem and obtain pre-rift sediments.

Site Summary, Site 401. Lat. 47°25.65'N; Long. 08°48.68'W; Water Depth: 2486m.

The loss of the entire drill string shortly after reentering Hole 400A necessitated a thorough review of the Biscay program in the light of the remaining drill pipe length. A new site was selected on the edge of the Meriadzek Terrace to obtain pre-rift sediments and a Tertiary section less affected by dissolution than that penetrated at Site 400A. A core of Pleistocene nanno ooze was cut at the mudline prior to washing down to a depth of 94m subsea and the hole was cored continuously thereafter to a total depth of 3410m. Upper and Middle Eocene greenish-gray nanno chalks are separated by a 2 my hiatus from Lower Eocene yellow-brown marly nanno chalks. A 5 my hiatus is present between the Upper Paleocene and Lower Paleocene but the yellow-brown chalks continue down through the Maestrichtian into the uppermost Campanian. A prolonged hiatus separates these Campanian chalks from reddish shallow-water limestones. Excellent faunal preservation in the Tertiary section indicates that Site 401 was above the CCD. Supplemented by the excellent paleomagnetic results, it is anticipated that this section will be highly valuable for biostratigraphic studies, one reaching total depth. The bit release was operated successfully. Several logging runs (Sonic, Neutron, Gamma Resistivity, SP) were made successfully and without incident. Since pulling out of Hole 401, GLOMAR CHALLENGER has moved to Site 7 of the scientific prospectus.

Site Summary, Site 402, 402A. Lat. 47°52.48'N; Long. 08°50.44'W; Water Depth:2335m.

Hole 402 was spudded in a submarine canyon. A surface core of Pleistocene nanno ooze ran out before washing down 42m subsea. Two heat flow measurements were taken during spot coring to 130m subsea where Upper Eocene sediments were penetrated. Failure of the flapper valve at this time necessitated a round trip of drill string and start of hole 402A. After washing down to 130m subsea, the hole was continuously cored to total depth at 469.5m subsea. Heat flow measurements were made at 127.5 and 165.5m subsea. On completion of the hole, the bit was released successfully and the hole was logged in three runs using, Gamma/Sonic/Caliper, Gamma/Inductions and Gamma/Neutron/Density.

Between 130 and 170m Upper through Middle Eocene nanno and siliceous nanno chalks were present together with cherts and glauconitic limestone. At 170m extremely lithified calcareous claystones and dolomitic limestones of Upper Cretaceous-Albian age were encountered. Gas velocities were around 4.0km sec^{-1}. These limestones, with shallow water aspects, continued down to 232m subsea and rested on carbonaceous marly limestone, carbonaceous beds and thin dolostones of Albian to Upper Aptian age. At 443m, these rested on marly limestones of Lower Aptian age in which the drilling rate was four hours per 9.5m. The black shales were apparently despoited in inner or outer shelf depths. Pyrolysis analysis suggests majority of the carbon in the black shales is detrital in origin possibly representing carbonized plant remains. Similar results were obtained in the deep water black shales facies of Site 400A. The classical model of black shales deposits in a restricted basin is considered questionable in view of these results.

Site Summary, Site 403. Lat. 56°08.36'N; Long. 23°17.63'W; Water Depth: 2317m.

Site 403 was occupied on the southwest margin of the Rockall Plateau and was continuously cored to the total depth of 489m. Drilling was prematurely terminated at this depth to avoid hazarding the drill string in the unconsolidated lower Eocene sands encountered in the last 40m. Between seabed and a subsea depth of 230m foram nanno oozes and chalks ranging in age from Recent to Upper Miocene were penetrated. A small hiatus may be present at 75m depth between the Pliocene and Miocene. At 230m subsea, Upper Miocene chalks rested on Middle Oligocene chalks. At 232.5m subsea, Upper Oligocene chalks rested on siliceous nanno chalks of Middle Eocene age that passed down into volcaniclastic siltstones and chalks. Below 261m to total depth a deltaic (sequence of interbedded tuffs and mudstones) was penetrated with evidence of neritic-littoral conditions being given by conglomerates containing a shallow water fauna. Age of basal sediments is thought to be lowermost Eocene. Following termination of drilling, a Gamma/Sonic/Caliper Log was run before deteriorating weather conditions necessitated pulling out of the hole.

Site Summary, Site 404. Lat. 56°03.13'N; Long. 23°14.95'W; Water Depth: 2322m.

Site 404 was drilled to 389m subsea in 2322m water depth. This site was chosen to complete the unfulfilled objective of Site 403 at a location where the unconsolidated Lower Eocene sands were thought to be above important pre-rift sediments. In view of continuous coring of the Neogene section at Site 403, Site 404 was spot cored until 170.5m with cores being cut at the mud line, 9.0m, 21.0m, and 104m. Below 170.5m Upper Miocene foram nanno chalks were present to 220m subsea. At this depth, the Upper Miocene chalks rested on Middle Eocene tuffaceous porcelainites. At 218m another but smaller hiatus is present between these Middle Eocene beds and Lower Eocene siliceous tuffs. Between 218 and 389m the sediments are poorly fossiliferous but are apparently entirely Lower Eocene in age. The principal lithologies are shallow water marine glauconite micaceous mudstones and sandstones. The hole bottomed in conglomerates containing oyster shells.

Site Summary, Site 405. Lat. 55°20.19'N; Long. 22°03.45'W; Water Depth: 2974m.

Site 405 was drilled on the southwest margin of the Rockall Plateau. In view of the bad weather risk, this site was chosen as an offset to ensure penetration of the older section assumed to be more deeply buried to the south at Hole 406 (Lat. 55°15.56'N; Long. 22°05.47'W). The hole was continuously cored from seabed to 407m subsea and bottomed in steeply dipping Lower Eocene calcareous mudstones. Between the seabed and 19m subsea, much of the Holocene and Pleistocene was absent due to non-deposition or erosion, and thin Upper Miocene nanno chalks were found below. Beneath the Upper Miocene, Middle to Upper Lower Eocene siliceous nanno chalks indicate a hiatus of at least 40 my. The Eocene section consisted of siliceous nanno oozes giving way to siliceous marly nanno chalks at 93.5m subsea. Recovery was very poor in the 175-236m interval, possibly reflecting unconsolidated sands containing large gneiss pebbles. At 290m, more indurated calcareous mudstones were encountered exhibiting silification and strong laminations often dipping at 30 degrees. The rapid deposition of the Lower Eocene at 114m/my is remarkable.

Site Summary, Site 406. Lat. 55°15.05'N; Long. 22°05.04'W; Water Depth: 2911m.

Site 406 was drilled in 2911m water depth and bottomed in Lower Eocene claystone at 841m subsea. The hole was spot cored until 413.5m. Five heat-flow measurements were made. Bluish-white nanno chalks were penetrated to 515m subsea where a 5 my hiatus separated the Upper and Middle Miocene. Nanno chalks continue downward to 556.5m where a 5 my hiatus separated the Lower Miocene. Between 563 and 557m Lower Miocene through Lower Oligocene diatomite and chalks are present. At 677m, a 15 my hiatus separates Lower Oligocene diatomites and chalks and Upper Eocene foram-nanno chalks and diatomites. These give way at 730m to marly limestones. At 760m a hiatus of between 2.5 and 5 my is present between the Upper Eocene and Middle Eocene.

Below 760m claystone dolomite layers continue to total depth at 841m. The hole was prematurely terminated at this depth when the bit fell off. The hole was logged with Sonic/Caliper, Gamma/Neutron Density and Gamma/Induction tools. Site 406 is just five miles south of Site 405 and the Middle Eocene section of Site 406 is equivalent to the upper part of the section penetrated in 405 so that together these holes provide a composite section to just above basement. Our preliminary analysis of the results suggests the Lower-Middle Eocene section was deposited as a large fan in lower bathyl depths. The source of these claystones deposited at the rate of 114my was presumably the then subaerial Rockall Plateau. Steep 30° dips may indicate vertical movement along the fault scarp. At Site 406 the post-Middle Eocene section shows evidence of strong bottom current activity presumably responsible for the hiatuses. These pulses seem to have been associated with changes in silica productivity revealed by diatomites containing a few forams, although nannos are present. Rises in the CCD are notably evident by a Lower Middle Eocene red clay containing only a resistant nanno fossil and foraminifera assemblage. One major change in Middle Oligocene time may be related to subsidence of the Iceland-Faeroe Rise. It is noteworthy that derived upper slope and shelf species are much less abundant in post Middle Eocene time suggesting subsidence of the Rockall Plateau below shelf depths by that time.

Leg 49.

The GLOMAR CHALLENGER departed Aberdeen in mid-July and made port Funchal, MI on 4 Sept. Sites 9, 11, and 11a (Fig. 5) located on the west flank of the Reykjanes Ridge were drilled to 319, 479, 361m sub-bottom respectively. Site 9 drilling was in the youngest, shallowest crust drilled to date, with the most basalt cored with a single bit.

Co-chief Scientists B. Luyendyk and J. Cann report:

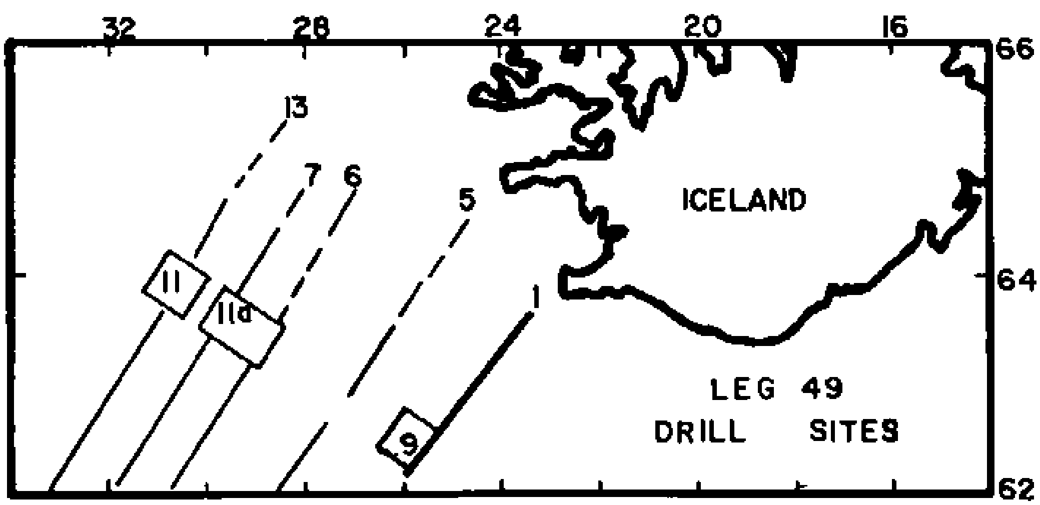

Figure 5. Drill sites, Leg 49: 9, 11, 11a.

Site Summary, Site 409 (49-9). Lat. 62°36.98'N; Long. 25°57.17'W; Water Depth 832m.

Site 409 was drilled on the western crestal regions of the Reykjanes Ridge. The site was located in Matuyama reversed stike near the Gauss boundary (anomaly 2'). Hard seafloor of turbidite sand required washing down to 24m. Hole continuously cored from there to 319m, recovering 88.4m or 30%. Zero to 83m is Pleistocene turbidites, graded muddy calcareous sand to calcareous mud. Erratics were found to 46m, as well as benthic shell sands and foram sands. This overlies 17m of Upper Pliocene sandy calcareous mud, ungraded, with some benthic shell fragments. Below this is basalt which was cored for 219m. Basalt is highly vesicular, phyric and aphyric with some altered olivine.

Site Summary, Site 408 (49-11A). Lat. 63°22.63'N; Long. 28°54.71'W; Water Depth: 1634m

Site 408 is located on the west flank of the Reykjanes Ridge on anomaly 6 (Ca. 20my) The hole was continuously cored to 361m, recovering 220m or 61%. The oldest sediment is Early Miocene nanno ooze intercalated with basalt at 344m.

The youngest unit, 38m of Pleistocene calcareous sandy mud turbidites, overlies 10m of Pliocene marly ooze. The remainder of the sediment sequence to basement is: 200m of Pliocene and Late Miocene nanno ooze; 29m of Early Middle Miocene siliceous marly nanno ooze; 17m of Early Miocene calcareous sandy mud; and 12m of Early Miocene glauconitic marly ooze which overlies basement. Sediments above 48m are ash-rich, whereas those below 238m contain occasional turbidites. Basement is 55m of vesicular aphyric basalt, extensively altered, with some intercalated sediment and breccia.

Site Summary, Site 407 (49-11). Lat: 63°56.32'N; Long. 30°34.56'W; Water Depth: 2472m.

Site 407 was drilled on the western flank of the Reykjanes Ridge. The site lies on magnetic anomaly 13 (36 to 38my) and was cored continuously from the mud line.

Below 15cm of postglacial sediment, were 45m of Pleistocene glacial marine sediment with occasional erratics, and some layers of volcanic ash. Below this is a unit of Late Miocene-Pliocene nannofossil ooze and chalk, reaching down to 160m subbottom. Below this a unit of siliceous nannofossil chalk, containing one thick ash band of mid-Miocene age, continues to 272m subbottom. The fourth sedimentary unit is an Oligocene to Early Miocene nanno chalk with increasing amounts of very angular black basalt clasts towards the first basalt lavas reached at 300m subbottom. Total penetration was 279m subbottom.

The lava sequence consists of flows and pillow lavas interbedded with nanno chalk, some of which was recovered. Thin sections of the basalts show a uniform aphyric or subaphyric composition, with phenocrysts of olivine (only fresh in glass rinds), plagioclase, and sometimes, augite. Zeolite facies alteration had occurred throughout the section. It was not clear from the petrography whether the Iceland hotspot was more or less active at the time of anomaly 13 than it is now.

SHIPBOARD SCIENTIFIC STAFFING: LEGS 48, 49, 50.

<u>Leg 48</u>.

L. Montadert	Co-chief Scientists	France	Inst. Francais du Petrole
D. Roberts		U.K.	Inst. Oceanog. Sciences
R. W. Thompson	Sedimentologist and Staff Representative	USA	Humbolt State Univ.
G. A. Auffret	Sedimentologist	France	CNEXO
D. N. Lumsden	Sedimentologist	USA	Memphis State Univ.
H. Kagami	Sedimentologist	Japan	University of Tokyo
P.P. Timofeev	Sedimentologist	USSR	Academy of Sciences
W. D. Bock	Micropaleo/Forams	USA	University of Miami
P. A. Dupeuple	Micropaleo/Forams	France	Faculte de Sciences
D. Schnitker	Micropaleo/Forams	USA	University of Maine
C. Muller	Micropaleo/Nanno	FGR	Johann-Wolfgang-Goethe Univ.
E. A. Hailwood	Paleomagnetics	U.K.	Univ. of Southampton
W. Harrison	Organic Geochemist	USA	University of Oklahoma
T. L. Thompson	Petroleum Geology	USA	University of Oklahoma

<u>Leg 49</u>.

J. R. Cann	Co-chief Scientists	U.K.	University of East Anglia
B. Luyendyk		USA	University of California
G. Sharman	Sedimentologist and Staff Representative	USA	Scripps Inst. of Oceanog.
W. P. Roberts	Sedimentologist	USA	Madison College, Virginia
A. Shor	Sedimentologist	USA	WHOI
W. A. Duffield	Igneous Petrologist	USA	USGS, Menlo Park, Ca.
J. Varet	Igneous Petrologist	France	Univ. Paris-South
W. Vennum	Igneous Petrologist	USA	California St. College
B. P. Zolotarev	Igneous Petrologist	USSR	Academy of Sciences
R. Z. Poore	Micropaleo/Forams	USA	USGS, Menlo Park
J. C. Steinmetz	Micropaleo/Nanno	USA	University of Miami
A. Faller	Paleomagnetist	U.K.	Leeds University
K. Kobayashi	Paleomagnetist	Japan	University of Tokyo
D. A. Wood	Geochemist	U.K.	Imperial College
M. Steiner	Paleomagnetist (Seds)	USA	University of Wyoming

<u>Leg 50</u>.

Y. Lancelot	Co-chief Scientists	France	University of Paris
E. L. Winterer		USA	Scripps Inst. of Oceanog.
A. Bosellini	Sedimentologist	Italy	University of Ferrara
M. Melguen	Sedimentologist	France	Centre Ocean. de Bretagne
I. Price	Sedimentologist	U.K.	British Petroleum
W. Schlager	Sedimentologist	USA	University of Miami
R. E. Boyce	Physical Properties and Staff Representative	USA	Scripps Inst. of Oceanog.
W. Sliter	Micropaleo/Forams	USA	USGS, Menlo Park
E. Vincent	Micropaleo/Forams	USA	Scripps Inst. of Oceanog.
P. Cepek	Micropaleo/Nanno	FRG	Bundes. Geowissen. Rohstoffe
J. Westberg	Micropaleo/Radiolaria	USA	Scripps Inst. of Oceanog.
E. M. Galimov	Geochemist	USSR	Hydrocarbon Institute
K. Taguchi	Geochemist	Japan	Tohoku University
D. Fritz	Petroleum Geologist	USA	Gulf International, Texas

JOIDES/DSDP PUBLICATIONS

Since the report in JOIDES JOURNAL No. 5, the following publications have appeared:

Southern Ocean Targeted - Kennett, J. P., Sclater, J. G., and Van Andel, Tj. H., Geotimes, March 1976, pp. 21-24.

Initial Report, Volume 34.

Initial Core Descriptions for Leg 42B and 43.

FUTURE PUBLICATIONS

Initial Report Volume 35 is expected to be out in September 1976. The OCP intends to publish a modified version of a white paper outlining the drilling objectives of this panel. This will probably appear in EOS later this year.

It is also intended that the aims of the Ocean Paleoenvironment Panel be the subject of a Geotimes article later this year.

REPORT FROM SITE SURVEY MANAGEMENT

Status of Site Surveys

PAC 4 and PAC 5: R/V CONRAD successfully completed a multichannel seismic/MG and G site survey in the Pacific sites 5 and 6 area (Figure 3) acquiring all data objectives specified for the survey. A brief shipboard report is in preparation at L-DGO at this time.

PAC 14: Preliminary results of the recent survey by R/V KANA KEOKI (HIG) have been presented to the data bank pending final analysis. The results indicate a successful survey.

The R/V THOMAS WASHINGTON departed Guam on 8 July 1976 to conduct surveys for the PAC 14 site (Figure 3) which included two ship refraction work with R/V CHIEN LIEN of Taiwan. Early reports indicate at least three seismic stations have been completed.

Atlantic Sites 9, 11, 11A: Profiler data acquired by R/V METEOR (FRG) with final track charts were received during June.

Atlantic Sites 12 and 13: Preliminary results from the University of Miami/Bedford Institute of Oceanography survey in May were received in June and indicate a successful survey aboard R/V ISELIN. Preliminary playback of Site 12 data has been completed with the results being sent to Bedford Institute. Bedford has approved the filter setting selected during analysis at L-DGO, so the final playback will be run and the results forwarded to Bedford in August. Site 13 seismic profiles, track charts, magnetics, bathymetry and gravity data recently acquired by CSS BAFFIN (BIO) were received at the data bank.

Atlantic Site 15 (Caribbean): A track chart of a recent survey by R/V FLORENCE (IFP, Paris) has been received and the associated data are requested as soon as possible. Track charts of multichannel seismic surveys in the Caribbean have been received from UTMSI and Shell Oil Company. Copies of multichannel data acquired by UTMSI during their 1975 IPOD survey are expected early in August.

Future Surveys

Proposals are being received from U.S. institutions to work in 1) the Blake Bahama Basin (ALT I), 2) the Mid-American Trench, 3) the Nauru Basin (PAC 8, 9, 10), and 4) the Philippine Sea. The Federal Republic of Germany also proposes to do additional multichannel seismic work in the Philippine Sea area.

SCIENTIFIC OBJECTIVES

Complete summaries of the Scientific Objectives are given in the Scientific Prospectus Reports, Leg 49 and 50, produced by DSDP.

Leg 49 - North and Central Atlantic Ocean

Drilling sites will be located (Figure 1.) on the west flank of the Reykjanes Ridge (Sites 9, 11A, 11) and on the west flank of the Mid-Atlantic Ridge (MAR), at 45°N (Site 10) and south of the Azores (Sites 12 and 13). Scientific topics to be investigated on Leg 49 include: 1) evolution of mantle plume sources in time, 2) aging of the volcanic layer, 3) degree of hydrothermal alteration and metamorphism of the volcanic layer, 4) lateral and vertical variation of the petrochemistry, magnetic properties and structure of the volcanic layer, 5) the north-south variability of the volcanic layer through the North Atlantic, and 6) relating the North Atlantic sedimentation history to regional topography, ocean circulation systems and glaciation.

These topics fall under three general categories. The first is crustal processes occurring at diverging boundaries now and during the geologically recent past. Important questions concerning igneous processes at plate boundaries are the chemistry of lavas and their variability and correlation with such factors as determination of spreading rate or tectonic environment. It is important to determine the structure and thickness of flow units as well as their magnetic and seismic properties. How do these parameters match preconceived values determined from geophysical models? Certain questions regarding hydrothermal processes at ridge crests need study. Do the rocks show evidence of hydrothermal convection and how is this process localized vertically and horizontally? What effects could it have on the chemistry of sea water and can it account for metalliferous deposits in the volcanic layer? Lines of evidence from dredges and ophiolites suggest metamorphism occurs periodically in the volcanic layer. By drilling we seek evidence of this and its effects on the vertical stratigraphy. Also, how is this related to hydrothermal circulations?

A second category of topics is temporal variations in the characteristics of the volcanic layer. How does old crust differ from young? Is there evidence for change in mantle source chemistry, particularly the distinctive chemistry which seems to characterize mantle plumes? How important is hydrothermal activity in older crust? What are the weathering processes in the volcanic layer? How does aging affect the magnetic properties and seismic velocities of the volcanic layer? These types of questions all will be examined by the drilling program.

The last category addresses the problem relating to North Atlantic sedimentation. Significant sediment cover (200-500m) exists at Sites 11 and 11A. Site 11 will be drilled on 40 my old crust. Because the Reykjanes Ridge is not much older than this, the Norwegian Sea must have been quite narrow at this time and deep water flow to the south may have been quite different than it is today. A question is what was the sedimentary environment during this period. Hopefully, glacial sediment can be distinguished from sediment deposited from Terrigenous sources which would provide information on the glacial history of the area. The provenance of any terrigenous materials and variations in detrital components of non-glacial sediments along with the biogenic constituents will provide information on the history of bottom circulation.

Leg 50 - Moroccan Basin

Leg 50 will be entirely devoted to the study of the earliest history of the North Atlantic Ocean. Such a study requires a penetration probably in excess of 3000m into the sediments and the GLOMAR CHALLENGER may have time to occupy only one multiple re-entry site during the entire cruise.

The deep penetration site is located off Morocco, approximately 145km northwest of Agadir in 3000m of water depth (see cover figure). The major objective for this site is the sampling of lower Jurassic sediments believed to represent the first layers deposited at the foot of the rifted African continental margin just after the initial phase of opening of the Atlantic. There are few places in the entire Atlantic where such sediments could be reached by the GLOMAR CHALLENGER. The southern part of the Moroccan Basin represents a most attractive area because of a combination of factors such as the relatively shallow depth of the basement and erosion of the uppermost sediments. The site is located in a basin very close to the African continental margin about 30km seaward of the outer limit of a field of diapiric structures believed to correspond with Triassic(?) to lower Jurassic evaporites. This location is well within the Jurassic magnetically quiet zone in an area where the age and the nature of the basement are unknown. This basement might consist of lower Jurassic oceanic crust,or of Triassic to lower Jurassic foundered continental crust. The latter case would imply a tectonic separation of this outer edge of the continent from the adjacent African continental domain. Because of safety restrictions the basement may not be sampled during Leg 50.

The oldest sediments recovered on both sides of the North Atlantic (Sites 105 and 367) consist of pelagic deep marine marly limestones of early Late Jurassic age (oxfordian). In both cases they immediately overlie the oceanic basement and provide a reliable basement isochron in the vicinity of the quiet zone boundary. The Oxfordian is known to correspond with an abrupt transgression in many areas around the North Atlantic (Morocco, Nova Scotia, Gulf Coast). This transgression marks the onset of truly open-marine conditions on these margins following the deposition of sediments indicative of fluviatile or restricted marine environments of early Jurassic age, together with Triassic(?) to lower Jurassic evaporites. It appears essential to investigate the nature of the equivalent strata of these facies within the basin itself in order to understand the early evolution of both the basin and the adjacent margin.

As the uppermost layers are missing at the proposed location the Neogene sediments will be sampled at an offset hole several miles to the south where the geologic record appears complete on the seismic profiles. This younger sedimentary record is of special interest because of the proximity to the Mediterranean Sea so that the influence of the Miocene Mediterranean salinity crisis on the Atlantic pelagic sedimentation should be exceptionally well recorded. Another site has been selected on the Mazagan Plateau, on the Moroccan continental margin. There the post-Jurassic section can be sampled in a structural setting different from that of the basin, so that the subsidence history of the margin would be deciphered and a complete transect of the margin could be obtained.

The deep primary site is a multiple re-entry hole and a rather complete logging program will be conducted. Because of the exceptionally deep penetration considered, extra safety precautions will include a continuous monitoring of gaseous and liquid hydrocarbons in the sediments, and a careful evaluation of the state of maturation of the organic matter and of the hydrocarbon potential of the sediments.

STANDARDIZED NUMBERING SYSTEM FOR TENTATIVE SITES

It has been recommended by the Active Margin Panel that the following standardized numbering system for tentative sites be adopted.

1. The sites will be designated when a scientific objective and a suitable regional target area have been defined. For example, NP-1: The NP designates the general geographic locality (North Philippine Sea) suitable for drilling to answer a general problem and the numeral one (1) designates the location (area) to solve a scientific objective.

2. When an exact location has been determined, the site is designated by a small letter, for example, NP-1a.

3. If further data dictates modification, then the new site(s) is designated with subsequent letters: for example, NP-1b, NP-1c, etc. All of these would represent alternate sites for solving NP-1 objectives.

4. In summary:

   NP-1 (x)
   where, NP = region chosen to solve a scientific problem
   1 = area (or objective)
   x = target of exact location

NEWS ITEMS

Presentation to GSA

J. Creager on behalf of JOIDES and DSDP presented to the Geological Society of America a polished diabase core section taken from a deep sea core. The rock is on permanent loan to GSA and will be exhibited at the National Headquarters in Boulder, Colorado. John C. Frye, Executive Director of GSA, stated that the diabase was unique to their collection and on behalf of the Society expressed their thanks and appreciation.

Drill String Loss

Approximately 16,000 ft of drill string was lost shortly after re-entry at site 400A on Leg 48. Fortunately 20,000 ft of spares from the GLOMAR EXPLORER were available and shipped immediately to the CHALLENGER to overt a serious delay in the drilling program. Steps are currently underway to purchase an additional 20,000 ft of spare drill pipes. This will bring the shipboard inventory to approximately 36,000 ft.

DSDP Science Operations

Dr. Stan M. White has been named as Associate Chief Scientist for Science Operations. This office is directly responsible to the Project Chief Scientist. Dr. White was previously at California State University at Fresno as Professor of Geology.

Dr. Matt Salisbury is a new Staff Scientist at DSDP in the Office of Science Operations. He previously was located at the State University of New York at Binghamton. Dr. Salisbury was the past Liaison Officer with NSF for DSDP.

Fatality Aboard CHALLENGER

We are sorry to report the death of one of the rotary helpers, Richard Meadows, aboard the GLOMAR CHALLENGER during Leg 48. Our deepest regret to his family and fellow crew members.

PANEL AND COMMITTEE MEETINGS CALENDAR: August 1976 through February 1977.

	1976					1977	
	AUG	SEP	OCT	NOV	DEC	JAN	FEB
EXCOM	3-4 Seattle		18-19 Brest			18-19 College Station	
PCOM			5-7 Brest			11-13 College Station	
OCP		30-	-2 L-DGO			4-6 DSDP	
AMP	10-12 DSDP						
PMP		27-29 Villefranche					
OP							
SSP		?	2-4 L-DGO				
SED. PET. PANEL		16-17 Edinburgh					
IGP							
OGP				7 Denver			
STRAT. CORR.					7-9 Cambridge		
DOWNHOLE PANEL		27-29 Houston					
SAFETY PANEL							
IHP							7-8 DSDP
LEG		49		50	51		52

DIRECTORY OF JOIDES COMMITTEES AND PANELS

Executive Committee

Dr. Maurice Rattray, Jr., Chairman
(Alternate: Dr. Joe S. Creager)
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-5189 (543-5099)

Professor Dr. F. Bender
(Alternate: Prof. Dr. H. J. Durbaum)
Bundesanstalt fur Geowissenschaften und Rohstoffe
3 Hannover 51, Postfach 510153
Federal Republic of Germany
Tel: 0511, 64681

Dr. John V. Byrne
(Alternate: Dr. George Keller)
Oregon State University
School of Oceanography
Corvallis, Oregon 97331
Tel: 503-754-1763

Dr. Paul M. Fye
(Alternate: Dr. Arthur E. Maxwell)
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. William W. Hay
(Alternate: Dr. C.G.A. Harrison)
Rosenstiel School of Marine and Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149
Tel: 305-350-7527

Dr. Charles E. Helsley
(Alternate: Dr. Ralph Moberly)
Hawaii Institute of Geophysics
University of Hawaii
2525 Correa Road
Honolulu, Hawaii 96822
Tel: 808-948-8760

Sir Peter Kent, F.R.S.
(Alternate: Dr. P. R. Twinn)
Natural Environment Research Council
Alhambra House
27-33 Charing Cross Road
London WC2H 0AX, England
Tel: 01-930-9232

Dr. John A. Knauss
(Dr. Norman D. Watkins)
University of Rhode Island
Kingston, Rhode Island 02881
Tel: 401-792-6222

Monsieur Yves LaPrairie
(Alternate: Monsieur Jacques Debyser)
C.N.E.X.O.
B. P. 107, Paris, 16 France
Tel: 723 5528, ext. 420

Dr. Ryuzo Marumo
(Alternate: Dr. Noriyuki Nasu)
Ocean Research Institute
University of Tokyo
Nakano, Tokyo 164 Japan

Dr. William A. Nierenberg
(Alternate: Dr. Charles E. Merdinger)
Scripps Institution of Oceanography
University of California, San Diego
La Jolla, California 92093
Tel: 714-452-2826 (452-2836)

Dr. Worth D. Nowlin, Jr.
(Alternate: Dr. William Bryant)
Department of Oceanography
Texas A&M University
College Station, Texas 77843
Tel: 713-845-7211 (845-2153)

Dr. M.N.A. Peterson (Ex-officio)
(Alternate: Dr. D. G. Moore, Ex-officio)
Deep Sea Drilling Project, A-031
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-3500 (452-3521)

Academician A. V. Sidorenko
(Alternates: Dr. Gleb Udintsev and Dr. V. Krashenninikov)
Academy of Sciences of the USSR
Leninski prospect 14
Moscow V-71, USSR
(Udintsev Tel: 234 9686)

Dr. Manik Talwani
(Alternate: Mr. John Ewing)
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900
(Alternate: Woods Hole Oceanographic Institution, Woods Hole, Massachusetts 02543; Tel: 617-548-1400)

Planning Committee

Dr. Joe S. Creager, Chairman
(Alternate: Dr. Dean A. McManus)
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206:543-5099am; 543-4130pm
(543-5099)

Dr. Helmut Beiersdorf
(Alternate: Dr. U. von Rad)
Bundesanstalt fur Geowissenschaften
und Rohstoffe
3 Hannover 51, Postfach 510153
Federal Republic of Germany

Dr. William R. Bryant
(Alternate: Dr. Stefan Gartner)
Texas A&M Univeristy
Department of Oceanography
College Station, Texas 77843
Tel: 713-845-2153

Mr. John I. Ewing
(Dr. Dennis E. Hayes)
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400
(Alternate: Lamont-Doherty Geological
Observatory, Palisades, New York
10964; Tel: 914-359-2900)

Dr. C. G. A. Harrison
(Alternate: Dr. Wayne D. Bock)
Rosenstiel School of Marine and
Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149
Tel: 305-350-7400

Dr. James R. Heirtzler
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. Charles E. Helsley
(Alternate: Dr. Ralph Moberly)
Hawaii Institute of Geophysics
University of Hawaii
2525 Correa Road
Honolulu, Hawaii 96822
Tel: 808-948-8760

Dr. James Kennett
(Alternate: Dr. Jean-Guy Schilling)
University of Rhode Island
Kingston, Rhode Island
Tel: 401-792-6216 (792-6102)

Dr. LaVern D. Kulm
(Alternate: Dr. J. Dymond)
Oregon State University
School of Oceanography
Corvallis, Oregon 97331
Tel: 503-754-2296

Dr. Anthony S. Laughton
(Alternate: Dr. D. H. Matthews)
Institute of Oceanographic Sciences
Wormley, Godalming, GU8 5UB
Surrey, England

Dr. Xavier LePichon
(Alternate: Dr. Yves Lancelot)
C.N.E.X.O.
B.P. 107, Paris 16, France
Tel: 723-5528

Dr. Noriyuki Nasu
Ocean Research Institute
University of Tokyo
Nakano, Tokyo 164, Japan

Mr. William Riedel (Ex-officio, Curator)
Scripps Institution of Oceanography
University of California, San Diego
La Jolla, California 92093
Tel: 714-452-4386

Dr. Gleb Udintsev
(Alternate: Dr. V. Krashenninikov)
Academy of Sciences of the USSR
Leninsky prospect 14
Moscow, USSR
Tel: 234 9686

Dr. E. L. Winterer
(Alternate: Mr. William Riedel)
Scripps Institution of Oceanography
University of California, San Diego
La Jolla, California 92093
Tel: 714-452-2083 (452-4386)

JOIDES Advisory Panels

Downhole Measurements

Dr. R. Hyndman, Chairman
Victoria Geophysical Observatory
Earth Physics Branch
Department of Energy, Mines & Resources
5071 West Saanich Road, R.R. 7,
Victoria, B.C., V8X 3X3, Canada
Tel: 604-388-3208, 388-3949

Mr. R. E. Boyce
Deep Sea Drilling Project, A-031
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-3524

Dr. N. Christensen
Department of Geological Sciences AK-20
University of Washington
Seattle, Washington 98195
Tel: 206-543-7143

Dr. J. R. Heirtzler (Ex-officio)
Department of Geology and Geophysics
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. A. F. Richards
Marine Geotechnical Laboratory
Center for Marine & Environmental Studies
Lehigh University
Bethlehem, Pennsylvania 18015

Dr. O. Serra
ELF-ERAP
7 Rue Nelation,
75739 Paris Cedex, France

Industrial Liaison

Mr. W. A. Roberts, Chairman
Executive Vice President
Phillips Petroleum Company
Bartlesville, Oklahoma 74004
Tel: 918-661-3833

Mr. Fred C. Ackman, President
Esso Exploration, Inc.
P. O. Box 146
Houston, Texas 77001
Tel: 713-221-1877

Mr. Melvin J. Hill
Vice President and Coordinator
Gulf Oil Corporation
P. O. Box 1166
Pittsburgh, Pa. 15230
Tel: 412-391-2400

Monsieur Gilbert Rutman
Societe Nationale des Petroles
D'Aquitaine
Tour D'Aquitaine - Cedex No. 4
92080 Paris La Defense, France

Information Handling

Dr. M. A. Rosenfeld, Chairman
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400, ext. 409

Dr. D. W. Appleman
Department of Mineral Sciences
Natural History Building
Smithsonian Institution
Washington, D.C. 20560
Tel: 202-381-6331

Mr. J. G. Barr
Standard Oil Company of California
Room 538, 130 Sutter
225 Bush Street
San Francisco, California 94120
Tel: 415-894-3385

Dr. Joe S. Creager (Ex-officio)
Department of Oceanography WB-10
University of Washington
Seattle, Washington
Tel: 206-543-5099am; 543-4130pm

Dr. T. A. Davies
Department of Geology
Middlebury College
Middlebury, Vermont 05753

Dr. H. Glashoff
Documentation Service
Bundesanstalt fur Geowissenschaften
und Rohstoffe
3 Hannover 51, Postfach 510153
Federal Republic of Germany

Mr. P. Grim
Marine Geology and Geophysics Branch
Code D621 NOAA
Environmental Data Service
Boulder, Colorado 80302

Dr. J. C. Kelley
College of Earth Sciences
San Francisco State College
San Francisco, California 94132
Tel: 415-469-1577, ext. 1501

Dr. A. Loeblich, Jr.
Department of Geology
University of California
Los Angeles, California 90024

Professor L. Sitnikov
Academy of Sciences of the USSR
I, Letnyaya Lublino
Moscow, 109387, USSR

Dr. J. Usher (Exofficio)
Deep Sea Drilling Project, A-031
Scripps Institution of Oceanography
La Jolla, California 92093

Dr. T. Worsley
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-8828

Inorganic Geochemistry

Dr. Joris M. Gieskes, Chairman
Scripps Institution of Oceanography A-015
University of California, San Diego
La Jolla, California 92093
Tel: 714-452-4257

Dr. Wallace S. Broecker
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900, ext. 300

Dr. D. S. Cronan
Department of Geology
Royal School of Mines
Prince Consort Road
London SW7 2BP, England
Tel: 01-589-5111

Mr. John I. Ewing (Ex-officio, L-DGO)
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. Heinrich D. Holland
Hoffman Laboratory, Harvard University
20 Oxford Street
Cambridge, Massachusetts 02138
Tel: 617-495-5892

Dr. Ian R. Kaplan
Department of Geology
University of California, Los Angeles
Los Angeles, California 90024
Tel: 213-825-1805

Dr. Frank T. Manheim
U. S. Geological Survey
Department of Marine Science
830 1st Street South
St. Petersburg, Florida 33701
Tel: 813-898-7411

Dr. Erwin Suess
School of Oceanography
Oregon State University
Corvallis, Oregon 97331
Tel: 503-754-2296

Dr. K. K. Turekian
Department of Geology & Geophysics
Yale University
Box 2161
New Haven, Connecticut 06520
Tel: 203-436-0377

Dr. I. M. Varentsov
(Alternate: Dr. G. N. Baturin)
Geologic Institute, USSR Academy
of Sciences
Pizhevskiy perculok 7
Moscow Zh-17, 109017 USSR
(Alternate: Academy of Sciences of
the USSR, I, Letnyaya, Lublino
Moscow, 109387, USSR

Dr. K. H. Wedepohl
34 Gottingen
Geochemisches Institut der
Universitat
Goldschmidstrasse 1
Federal Republic of Germany

Ocean Crust

Dr. J. R. Cann (Chairman)
University of East Anglia
School of Environmental Science
Univ. Plain, Norwich NR4 7TJ England
Tel: 0603-56161

Dr. Claude J. Allegre
Universites de Paris 6 et 7
Department des Sciences de la Terre (7)
Institut de Physique du Globe (6)
4 Place Jussieu
75230 Paris Cedex 05, France

Dr. Leonid V. Dmitriev
Institute of Geochemistry
USSR Academy of Sciences
47 a Vorobiovscoe shosse
Moscow B 334, USSR
Tel: 137-00-11, ext. 83

Dr. Paul J. Fox
Department of Geological Sciences
State University of New York at Albany
1400 Washington Avenue
Albany, New York 12222
Tel: 518-457-3974

Dr. Jean Francheteau
Centre Oceanologique de Bretagne
B. P. 337
29273 Brest Cedex, France
Tel: 98 80-46-50

Dr. J. M. Hall
Deep Sea Drilling Project, A-031
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-3962

Dr. Stanley R. Hart
Department of Earth and Planetary
Sciences
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139
Tel: 617-253-5294

Dr. James R. Heirtzler
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548--1400

Dr. Ikuo Kushiro
(Alternate: Dr. M. Ozima)
Geological Institute
Faculty of Science
University of Tokyo
Bunkyo-ku, Tokyo 113, Japan

Dr. W. Schreyer
(Alternate: Dr. H. U. Schmincke)
Institut fur Mineralogie
Ruhr-Universitat Bochum
D463, Bochum - Querenburg
Universitatstrasse 150
Postfach 2148
Federal Republic of Germany
Tel: 02321-713511

Dr. John C. Sclater
Massachusetts Institute of Technology
54-1326
Cambridge, Massachusetts 02139
Tel: 617-253-1980

Dr. Manik Talwani
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900

Ocean Margin Active

Dr. Seiya Uyeda, Chairman
Earthquake Research Institute
The University of Tokyo
Bunkyo-ku, Tokyo, Japan
Tel: 03-812-2111, ext. 6439

Dr. Michael Audley-Charles
Imperial College of Science
and Technology
Department of Geology, Royal School
of Mines
Prince Consort Road, London SW7 2BP,
England

Dr. Rene Blanchet
Centre de Recherche en Geologie
Ave du Palais
92 211 St. Cloud, France
Tel: 602 4103

Dr. Creighton Burk
Marine Sciences Institute
Post Office Box 7999
Austin, Texas 78712

Dr. Joe S. Creager (Ex-officio)
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-5099am; 543-4130pm

Dr. Kazuo Kobayashi
Ocean Research Institute
University of Tokyo
Nakano, Tokyo, Japan

Dr. I. P. Kosminskaya
Institute of Physics of the Earth
USSR Academy of Sciences
Moscow Bolshaya
Gruzinskaya Ul., 10 USSR

Dr. Loren W. Kroenke
c/o Mineral Resources Division
Private Mail Bag
G. P. O., Suva, Fiji

Dr. Lavern D. Kulm (Ex-officio)
School of Oceanography
Oregon State University
Corvallis, Oregon 97331
Tel: 505-754-2296

Dr. Keith Kvenvolden
U. S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Tel: 415-323-8111, ext. 2513

Dr. William J.Ludwig
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900

Academician A. V. Pieve
Institute of Geology
USSR Academy of Sciences
Pyzhevskiy 7, Moscow ZH-17 USSR

Dr. Gordon Packham
Department of Geology & Geophysics
The University of Sydney
N.S.W. Australia 2006
Tel: 660-8916; 660-0522, ext. 2916

Dr. David W. Scholl
U. S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Tel: 415-383-8111

Dr. Roland Von Huene
U. S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Tel: 415-323-8111

Ocean Margin Passive

Dr. J. R. Curray, Chairman
Scripps Institution of Oceanography
Post Office Box 1529
La Jolla, California 92093
Tel: 714-452-3208

Dr. A. W. Bally
Shell Oil Company
Post Office Box 2099
Houston, Texas 77001
Tel: 713-220-5975

Professor Dr. D. Bernoulli
Geologisches Institut der Universitat
Bernoullistrasse 32
4056 Basel, Switzerland
Tel: 24-40-10

Mr. John I. Ewing
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. K. Hinz
Bundesanstalt fur Geowissenschaften
und Rohstoffe, Abt. Geophysik
3 Hannover 51, Postfach 510153
Federal Republic of Germany
Tel: 0511/6468330

Dr. J. M. Hunt
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. H. Kagami
Ocean Research Institute
University of Tokyo
Nakano, Tokyo 164, Japan

Dr. L. Montadert
Institute Francais du Petrole
Division Geologie
1 ct 4, Avenue de Bois-Preau
B.P. 18, 92 Rueil-Malmaison, France
Tel: 967-11-10, 967-17-66

Mr. D. G. Roberts
Institute of Oceanographic Sciences
Brook Road, Wormley, Godalming
Surrey GU8 5UB England
Tel: 042-879-2122, ext. 205

Professor Dr. E. Seibold
(Alternate: Dr. Von Stackleberg)
Geologisch-Palaontologisches Institut
Universitat Kiel
Olshausenstrasse 40/60
D-23, Kiel, Federal Republic of Germany
(Alternate: Bundesanstalt fur Geowissenschaften und Rohstoffe, 3 Hannover 51, Postfach 510153, FRG)

Dr. J. Thiede
Oregon State University
School of Oceanography
Corvallis, Oregon 97331
Tel: 503-754-3504

Ocean Paleoenvironment

Dr. Y. Lancelot, Chairman
C.N.E.X.O.
B.P. 107, Paris 16, France
Tel: 723 5528

Dr. W. H. Berger
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-2750

Dr. W. Berggren
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. P. L. Bezrukov
(Alternate: Dr. A. Lisitzin)
USSR Academy of Sciences
I Sadovaya Lublino
Moscow J-387, USSR

Dr. P. Cepek
Bundesanstalt fur Geowissenschaften
und Rohstoffe
3 Hannover 51, Postfach 510153
Federal Republic of Germany

Monsieur J. Debyser
C.N.E.X.O.
B. P. 107, Paris 16, France
Tel: 723 5528

Professor B. M. Funnell
School of Environmental Sciences
University of East Anglia
Norwich NR4, 7TJ, Norfolk, U.K.
Tel: 0603-56161

Dr. W. W. Hay
Rosenstiel School of Marine and
Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149
Tel: 305350-7527

Dr. Kenneth Hsu
Geologisches Institut der E.T.H.
Sonneggstrasse 5,
Zurich 6, Switzerland
Tel: (01) 32 63 11, ext. 3669

Dr. J. Kennett
University of Rhode Island
Kingston, Rhode Island 02881
Tel: 401-792-6216

Dr. V. Krashenninikov
USSR Academy of Sciences
Pyzhevskiy per 7
Moscow ZH 17, USSR

Dr. T. C. Moore
Graduate School of Oceanography
Narrangansett Bay Campus
Kingston, Rhode Island 02881

Dr. I. Premoli-Silva
Instituto di Paleontologie
Piazzale Gorini 15
20133 Milano, Italy
Tel: 292-813

Mr. W. Riedel
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-4386

Dr. H. Schrader
Geol. Inst. der Universitat Kiel
D 2300 Altenholz/Stift, Herrenhaus
Federal Republic of Germany
Tel: 0431-32-10

Dr. N. Shackleton
Su. Dept. of Quaternary Research
University of Cambridge
Cambridge CB1 2JF, England
Tel: 0223-59977

Dr. Y. Takayanagi
Geological & Paleontological Inst.
Tohoku University
Sendai, Japan

Dr. H. Thierstein
Scripps Institution of Oceanography
La Jolla, California 92093

Dr. Tj. H. Van Andel
School of Oceanography
Oregon State University
Corvallis, Oregon 97331
Tel: 503-754-2296, ext. 3504

Dr. Edward L. Winterer (Ex-officio)
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-2083

Dr. T. Worsley
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-4830

Organic Geochemistry

Dr. Keith Kvenvolden, Chairman
U. S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Tel: 415-383-8111, ext. 2513

Dr. Earl W. Baker
Department of Chemistry
Northeast Louisiana University
Monroe, Louisiana 71201
Tel: 318-372-4014

Dr. Ellis E. Bray
Mobil Oil Company, Inc.
Post Office Box 900
Dallas, Texas 75221
Tel: 214-331-6531

Dr. Geoffrey Eglinton
University of Bristol
School of Chemistry
Bristol BS8 1TS, England

Dr. J. Gordon Erdman
Phillips Petroleum Company
Bartlesville, Oklahoma 74003
Tel: 918-336-6600

Dr. John M. Hunt
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. Richard D. McIver
ESSO Production Research Laboratory
Post Office Box 2189
Houston, Texas 77001
Tel: 713-622-4222

Dr. Erwin Suess
School of Oceanography
Oregon State University
Corvallis, Oregon 97331
Tel: 503-754-2296

Dr. B. Tissot
Institut Francais du Petrole
1 et 4, Avenue de Bois-Preau
B.P. 18
92502 Rueil Malmaison, France

Dr. Dietrich Welte
(Alternate: Dr. E. Degens)
Lehrstuhl fur Geologie, Geochemie, und Lagerstatten des Erdols un der Kohle
Rhein-Westf. Techn. Hochschule
51-Aachen
Federal Republic of Germany
(Alternate: Dept. Geologie, Univ. of Hamburg, Hamburg, Germany)

Dr. E. L. Winterer (Ex-officio)
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-2083

Pollution Prevention and Safety

Dr. Hollis Hedberg, Chairman
Princeton University
118 Library Place
Princeton, New Jersey 08540
Tel: 609-921-7833

Dr. George Claypool
U. S. Geological Survey
Branch of Oil & Gas Resources
Denver Federal Center
Denver, Colorado 80225
Tel: 303-234-3561

Dr. Joe S. Creager (Ex-officio)
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-5099am; 543-4130pm

Dr. Joseph R. Curray
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-3208

Dr. Louis E. Garrison
U. S. Geological Survey
Post Office Box 6732
Corpus Christi, Texas
Tel: 512-883-5511, ext. 295

Dr. H. Grant Goodell
Department of Environmental Sciences
University of Virginia
Charlottesville, Virginia 22901
Tel: 804-924-3995

Dr. Arthur E. Green
Exxon Production Research Laboratory
Post Office Box 2189
Houston, Texas 77001

Dr. A. Mayer-Gurr
Waldheimstrasse 25
D 3000, Hannover 81
Federal Republic of Germany

Dr. Maurice Rattray, Jr. (Ex-officio)
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-5189

Dr. Seiya Uyeda (Active Margin sites only)
Earthquake Research Institute
The University of Tokyo
1-1-1, Yayoi, Bunkyo-ku
Tokyo, Japan

Mr. Oscar E. Weser
Deep Sea Driling Project
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-3524

Dr. E. L. Winterer
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-2083

Sedimentary Petrology and Physical Properties

Dr. G. R. Heath, Chairman
Graduate School of Oceanography
University of Rhode Island
Kingston, Rhode Island 02881
Tel: 401-792-6178

Professor Dr. D. Bernoulli
Geologisches Institut der Universitat
Bernoullistrasse 32
4056 Basel, Switzerland

Dr. W. Bryant (Ex-officio)
Texas A&M University
Department of Oceanography
College Station, Texas 77843

Dr. S. E. Calvert
Institute of Oceanographic Sciences
Wormley, Surrey GU8 5UB, England
Tel: 042-879-2122

Dr. C. J. Clausen
Norges Geotekniske Institutt
Postboks 40 Tasen
Oslo 8, Norway

Dr. J. Conolly
26 Westminster Road
Scarsdale, New York 10583

Dr. G. H. Keller
School of Oceanography
Oregon State University
Corvallis, Oregon 97331

Dr. A. P. Lisitzin
(Alternate: Dr. P. P. Timofeev)
USSR Academy of Sciences
I, Letnyaya, Moscow 109387, USSR
Tel: 170-33-21

Dr. F. Melieres
Centre Nationale de Recherche Scientifique
Universite de Paris VI, 4 Place Jussieu
Paris VI, France

Dr. G. Muller
Laboratorium fur Sedimentforschung
69 Heidelberg
Berlinstrasse 19
Federal Republic of Germany

Dr. A. Richards
Marine Geotechnical Laboratory
Center for Marine & Environmental
Studies
Lehigh University
Bethlehem, Pennsylvania 18015
Tel: 215-691-7000, ext. 618

Site Surveying

Dr. Brian T. R. Lewis, Chairman
Department of Oceanography WB-10
University of Washington
Seattle, Washington 98195
Tel: 206-543-6043

Dr. Elizabeth T. Bunce
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 617-548-1400

Dr. LeRoy M. Dorman
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-2406

Dr. Edgar S. Driver
Gulf Global Exploration Company
Post Office Box 1166
Pittsburgh, Pennsylvania 15230
Tel: 412-391-2400, ext. 605

Dr. Davis A. Fahlquist
Texas A&M University
College of Geosciences
Department of Geophysics
College Station, Texas 77843

Dr. Dennis Hayes
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900

Dr. Karl Hinz
Bundesanstalt fur Geowissenschaften
und Rohstoffe, Abt. Geophysik
3 Hannover 51, Postfach 510153
Federal Republic of Germany
Tel: 0511/6468330

Dr. Donald M. Hussong
Hawaii Institute of Geophysics
University of Hawaii
2525 Correa Road
Honolulu, Hawaii 96822
Tel: 808-948-7796

Dr. L. Kogan
Southern Branch of the Institute
of Oceanology
Gelendjik, Krasnodar Region
USSR

Dr. I. P. Kosminskaya
Academy of Sciences of the USSR
Moscow, Bolshaya
Gruzinskaya ul. 10, USSR

Dr. Marcus G. Langseth (Ex-officio)
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900

Dr. Shozaburo Nagumo
Earthquake Research Institute
The University of Tokyo
Bunkyo-ku, Tokyo, Japan (113)

Dr. Vince Renard
Centre Oceanologique de Bretagne
B. P. 337, 29273 Brest Cedex, France
Tel: 80-46-50

Dr. Roland Schlich
Institut de Physique du Globe
Observatoire Geophysique du Parc
St.-Maur, 4 Avenue de Neptune
94 - St. Maur-Des-Fosses, France
Tel: 833-46-50

Dr. G. Stober
c/o Deutsche Erdolversorgungsgesell-
schaft m.b.H. Deminex
400 Dusseldorf, Immermannstrasse 40
Federal Republic of Germany
Tel: 0211-36711

Dr. Roland Von Huene
U. S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Tel: 415-838-3111

Dr. Joel Watkins
University of Texas
Marine Sciences Institute
Galveston, Texas 77550
Tel: 713-765-2171

Stratigraphic Correlations

Dr. R. H. Benson
Department of Paleobiology
National Museum of Natural History
Smithsonian Institution
Washington, D. C. 20560

Professor Dr. H. M. Bolli
Eidg. Technische Hochschule Zurich
Geologisches Institut
Sonneggstrasse 5, CH-8006 Zurich
Switzerland

Dr. D. Bukry
U. S. Geological Survey
La Jolla Marine Geology Laboratory
8604 La Jolla Shore Drive
Box 271, La Jolla, Ca. 92093

Dr. P. Cepek
Bundesanstalt fur Geowissenschaften
und Rohstoffe
3 Hannover 51, Postfach 510153
Federal Republic of Germany

Dr. R. G. Douglas
Department of Geological Sciences
University of Southern California
Los Angeles, California 90007

Dr. S. R. Hammond
Hawaii Institute of Geophysics
2525 Correa Road
Honolulu, Hawaii 96822

Dr. N. Hughes
Department of Geology
Sedgwick Museum, Downing Street
Cambridge CB2 3EQ England

Dr. M. Petrushevskaya
Institute of Zoology
USSR Academy of Sciences
I, Universiteskaya Naberezhnaya
Leningrad V164, USSR

Mr. W. R. Riedel
Scripps Institution of Oceanography
La Jolla, California 92093
Tel: 714-452-4386

Dr. T. Saito
Lamont-Doherty Geological Observatory
Palisades, New York 10964
Tel: 914-359-2900

Dr. J. B. Saunders
Naturhistorisches Museum Basel
CH-4051, Basel, Augustinergasse 2
Switzerland

Dr. N. F. Sohl
U. S. Geological Survey
E-501, U. S. National Museum
Washington, D. C. 20244