

DRAFT

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JUN 27 1984

MINUTES OF A
MEETING OF THE JOIDES SITE SURVEY PANEL

held at the
Geologisches Institut, ETH, Zurich

May 28-29 1984

PRESENT:

Panel Members

E. J. W. Jones (U.K.) - Chairman
A. Mauffret (France)
J. Orcutt (US)
J. Peirce (Canada)
R. Sartori (ESF)
W. Weigel (FRG)

PCOM Representatives

H. Beiersdorf (PCOM liaison)
J. Honnorez (PCOM Chairman)

Ex-Officio and Guests

P. Barker (SOP)
C. Brenner (IPOD Data Bank)
J. Clotworthy (JOI)
L. Garrison (TAMU)
H. Zimmerman (NSF)

I. CHAIRMAN'S INTRODUCTION

In opening the meeting the chairman expressed his thanks to Professor Ken Hsu for enabling the Site Survey Panel to convene in his department at relatively short notice. The chairman then went on to welcome Dr. John Orcutt, who has replaced Dr. Fred Duennebier as U.S. representative, and the European Science Foundation member Dr. Renzo Sartori, who was attending the Panel meeting for the first time. Jones also conveyed the apologies of Dr. Nagumo, the Japanese representative, who was unable to find travel funds to come to Switzerland.

The chairman stressed that the last Panel meeting at Woods Hole (November 28-29 1983) had been poorly attended, making co-ordination and planning of future site surveys very difficult. The present session must make up the lost ground. Each member of the Panel is now required to have an alternate who should be kept fully informed of the committee's activities.

II. OCEAN DRILLING PROGRAM: JAN 1985 - JAN 1987

In Dr. Honnorez's absence early in the meeting Dr. Garrison reviewed the plans for the first two years' drilling as laid out by PCOM in Paris on May 21-23.

The following legs are scheduled to last for 56 days. Starting dates are given below.

- Leg 101: Jan. 1, 1985 (Bahamas Platform)
- Leg 102: Feb. 26 (ENA-3 and/or areas of sites 395A, 417B and 418A)
- Leg 103: April 23 (Galicia continental margin)
- Leg 104: June 18 (Norwegian Sea)
- Leg 105: Aug. 13 (Labrador Sea and Baffin Bay)
- Leg 106: Oct. 8 (MARK I)

*Leg 107: Dec. 3 (Mediterranean: Tyrrhenian Sea)

*Leg 108: Jan.28, 1986 (NW Africa: Cenozoic)

*Leg 109: March 25 (MARK II)

*Leg 110: May 20 (Barbados: Northern sites)

Legs 111, 112, 113: to be selected from regions given below.

Leg 114: December 30, 1986 (Weddell Sea)

Legs 111 - 113 will be selected from the following regions:

Ionian Sea

NW Africa, Mesozoic

Barbados South

Yucatan Basin

Venezuelan Basin

504 B

Costa Rica

East Pacific Rise (13°N)

Peru Trench

Chile Triple Junction

III. SCIENCE OPERATOR'S REPORT

L. Garrison reviewed the layouts of working space, surveying and laboratory equipment to be provided on the SEDCO/BP 471. Of particular interest to the Site Survey Panel is the development of a single channel digital acquisition system that will enable reflection data to be processed and displayed in real time. This will be a considerable improvement over the GLOMAR CHALLENGER seismic equipment. A general description provided by Dr. Phil Rabinowitz is given in Appendix A. The Panel emphasized the need for a Global Positioning System aboard the new drilling vessel, as many future site surveys will be carried out with GPS.

* Order may be changed but drilling is approved

IV. PANEL RECOMMENDATIONS FOR FUTURE SITE SURVEYS

Following a discussion of the Panel mandates proposed in the 1983 Woods Hole meeting members now agreed on a number of specific guidelines for future surveys. Seven drilling environments are considered:

- (i) Pelagic (shallow penetration)
- (ii) Small basin/open ocean (shallow penetration: areas subject to debris flows)
- (iii) Passive margin
- (iv) Forearc wedge
- (v) Spreading ridge: zero or thin sediment cover
- (vi) Ocean crust: thick sediment cover
- (vii) High temperature environment

In surveying these areas fifteen techniques were itemized: (1) single channel airgun seismic (2) single channel water gun seismic (3) 3.5 kHz profiles (4) Chirp sonar (5) multichannel seismic (6) seismic refraction (7) sidescan sonar (8) Seabeam bathymetry (9) piston coring (10) heat flow (11) magnetics/gravity (12) dredging and/or bare rock drilling (13) photography (e.g. ANGUS) (14) submersible studies (15) current meter measurements.

The survey techniques considered (a) essential and (b) desirable in each drilling environment are given in Appendix B. There will be occasional exceptions to the requirements listed in the table. Exceptions should be presented to the Site Survey Panel at an early stage in the site selection process. Surveys for riser sites were not included in the present table. At Woods Hole the Panel suggested that a core group be established to consider the specialist requirements for future riser sites.

Such a group has now been set up by PCOM. H. Beiersdorf proposed that the Site Survey Panel should have a representative on this committee. J. Peirce, proposed by J. Orcutt and seconded by W. Weigel, was unanimously voted the SSP representative.

V. DRILLING IN THE SOUTHERN OCEANS: SITE SURVEY REQUIREMENTS

A report on behalf of the Southern Oceans' Panel was given by Dr. Peter Barker. Two drilling legs have been proposed, one in the Weddell Sea and the other in Subantarctic waters (Appendix C):

A. Weddell Sea

The Weddell Sea proposal consists of the following sites:

<u>W1, W2:</u>	Maud Rise, in water depths of 2000-3000m
<u>W3:</u>	Astrid Ridge
<u>W4:</u>	Antarctic margin, off Crown Princess Martha Land
<u>W5:</u>	Weddell Sea, deep basin sites
<u>W6, W7, W8:</u>	Southeast margin of South Orkney Block (water depths 700-3000m)
<u>W9:</u>	Powell Basin
<u>W10</u>	Bransfield Strait
<u>W11:</u>	S. E. Drake Passage

The planned contributions to Weddell Sea Site Surveys are as follows:

- (i) Norway Dr. Y. Kristoffersen of the Norwegian Polar Institute has indicated the extent of multichannel seismic data recorded on expeditions to the southern part of the Weddell Sea during 1977 and 1979. Tracks are given in Figures 1 and 2 of Appendix D. A report of the results is due to appear in Tectonophysics. In the 1984/85 Austral summer additional geophysical surveys, combined with sampling, are to be undertaken off Halley Bay (Figure 3, Appendix D). Approximately 18 days are to be devoted to multichannel reflection seismic, refraction seismic, gravity, magnetics, bathymetry and heat flow. A further 12 days will be allocated for dredging and vibrocoreing in conjunction with deep-towed boomer surveys.

- (ii) FRG K. Hinz is presently organizing an expedition on POLARSTERN. Sites W3, W4 will be surveyed using multichannel seismic and heat flow.
- (iii) U.K. P. Barker has been allocated time on DISCOVERY during the Austral summer of 1984/85. The ship will be equipped with a 48-channel digital acquisition system, a 3.5 KHz profiler, magnetometer, gravity meter, piston corer and heat flow apparatus. Site surveys can be carried out at W5, W6, W7 and W8. The first survey will involve a piston coring transect to examine N-S facies variations. The Bransfield Strait and Drake Passage sites are considered to have sufficient site survey data, although heat flow measurements in the former area are desirable. W9 in the Powell Basin is a third priority for drilling targets and will only be examined if all other objectives on the DISCOVERY cruise are accomplished.
- (iv) U.S. The Glacier expedition is planned in the South Orkney region for the Austral summer of 1985-86. Further details will be sought from Professor J. Kennett.

A summary of the Weddell Sea surveys using the notation given in Appendix B is presented in Appendix E. The Panel recommended that sites W-3, 4 be surveyed using a 3.5 KHz profiler and a single-channel water gun system to achieve the high resolution necessary for optimum site selection. Furthermore, heat flow measurements in the Bransfield Strait are considered a desirable element of any future site survey in that region.

H. Beiersdorf and L. Garrison suggested that the Southern Oceans Panel should prepare a data package for each of the Weddell Sea sites for initial appraisal by the Safety Panel. This may lead to valuable

recommendations before the next set of site surveys commences:

J. Peirce suggested that a study of current shear should be made in addition to making the normal geophysical and geological observations.

B. The Subantarctic Sites

These sites have been primarily selected to achieve palaeoenvironmental objectives (see Appendix C).

The sites are as follows:

SA 1, 2, 3: A transect north of the American-Antarctic Ridge to examine the history of pelagic sedimentation in the Cenozoic. DSDP Sites 513, 514 form the northern end of the N-S transect.

SA 4: A forearc site on the South Sandwich Arc.

SA 5,6: These are situated on the Islas Orcadas Rise and Northeast Georgia Rise; to recover a Miocene section (normally absent in the Southern Oceans) and to determine the age of the rises and their importance in controlling palaeocirculation patterns.

SA 7,8,9: Drilling in basins on either side of the Meteor Rise.

All sites appear to be located using widely-spaced single channel airgun lines. The Site Survey Panel agreed that:

- (i) the data on which these sites are based needs to be compiled for a further review in September (see section on Working Groups, below)
- (ii) every effort should be made to obtain further site survey data (especially high resolution seismic, in view of the emphasis on palaeoenvironmental drilling targets). Ships on passage to the Weddell Sea during the next two Austral Summers should be strongly encouraged to make transits of the SA sites. Co-ordination should be carried out by the Site Survey Panel in conjunction with the SOP.

C. Further Southern Ocean Drilling

The Kerguelen - Gaussberg Ridge in the Southern Indian Ocean will be strongly supported by SOP as a major objective in the post-1987 drilling programme. Locating sites will require considerable survey effort since most of the data consists solely of single-channel airgun lines collected over a decade ago.

The Site Survey Panel recommends that drilling locations on the Kerguelen - Gaussberg Ridge be proposed by the Southern Oceans' Panel working in conjunction with the Indian Ocean Panel and submitted to the SSP by early November 1984, so that site surveys in this area can be considered at the next SSP meeting.

VI. SITE SURVEYS: BAHAMAS

This survey was discussed in detail at Panel meetings in January and November 1983 (see earlier minutes). J. Orcutt reported that the JOI - funded site survey has very recently been completed by the University of Texas. The information from the survey will be deposited in the IPOD Data Bank in the normal way. Some additional processing of the multichannel data (principally migration) is to be carried out around sites 1, 4 and 5 by J. Ladd and J. Austin. The latter has had access to earlier French data (Seabeam and MCS) in the region acquired by JEAN CHARCOT and RESOLUTION.

VII. SITE SURVEYS: ENA-3

No additional surveys necessary to meet drilling objectives proposed.

VIII. SITE SURVEYS: CONTINENTAL MARGIN OFF GALICIA

Drilling in this region has been given a high priority at the recent (May) meeting of the Atlantic Panel; it is probably the most closely-studied of all starved passive continental margins. The Panel considered that no additional site surveys were necessary. The drilling

locations had already been investigated by the Site Safety Panel. However, A. Mauffret indicated that additional multichannel seismic and Seabeam data had been obtained in this area since the last panel reviews and should be incorporated into an up-dated data package.

IX. SITE SURVEYS: NORWEGIAN SEA

Two main re-entry sites have been proposed by the Norwegian Sea Working Group to examine the nature and the underlying basement of the 'dipping reflector' sequence off western Norway. The area around each drill-site is well covered with multichannel seismic and other geophysical profiles, and no further surveys are considered necessary. K. Hinz is presently preparing a data package for each site, together with the contingency drilling locations, for presentation to the Safety Panel.

X. SITE SURVEYS: LABRADOR SEA AND BAFFIN BAY

J. Peirce gave an account of the present status of surveys around the Labrador Sea and Baffin Bay sites. As he reported at the November Panel meeting (circulated minutes p.15), HUDSON will be operating in the Labrador Sea in July and August 1984 and plans to collect seismic, magnetic and heat flow data for detailed site selection off Cape Farewell and the Labrador margin.

Two sites in Baffin Bay are proposed (BB1 and BB2: Appendix F). No additional surveys are needed around BB1, but BB3 requires a further seismic survey because it is located on an uplifted fault block. Because of the strong support from PCOM and others for drilling at BB3 the Site Survey Panel recommends that a seismic study should be carried out in this region as a matter of some urgency. J. Peirce reported that a hydrographic vessel will be in the area this summer and could carry out the necessary site survey if \$50,000 could be found to finance the transport of seismic gear and technicians for a period of one month. The possibility that JOI might fund the operation will be investigated immediately by Dr. Zimmermann.

An international fund for site surveys is presently unavailable.

XI. SITE SURVEYS: KANE FRACTURE ZONE

J. Orcutt reported that a two-stage survey of the Kane Fracture Zone to select drill-sites for Leg 106 is to be carried out in September and December 1984, the institutions involved being Lamont-Doherty, Woods Hole, URI and Dalhousie. The present data from the area do not give sufficiently detailed information about the bottom topography and structure to select specific sites for bare-rock drilling. The CONRAD and HUDSON surveys will use Seabeam, Sea MARC I and a chirp sonar (deep-towed, swept frequency sub-bottom profiler) to obtain the necessary detail of the bottom morphology and shallow structure (See Appendix G). A GPS will be used for navigation on both ships. Several members of the Panel expressed some concern that if the new drilling vessel were not equipped with GPS then much of the value of precisely surveyed sites would be lost.

The Site Survey Panel recommended that a GPS should be acquired for the new drilling vessel by January 1985.

XII. SITE SURVEYS: MEDITERRANEAN (TYRRENIAN SEA)

R. Sartori gave a detailed account of the transect of sites proposed to investigate the nature and history of stretching and crustal generation in the Tyrrhenian Sea. The area has a dense network of multichannel and single-channel seismic tracks and has been closely studied using heatflow, aeromagnetism and gravity. No further site surveys are considered necessary.

XIII. SITE SURVEYS: NW AFRICA (CENOZOIC)

PCOM at its recent Paris meeting had agreed to give the Cenozoic objectives in this area higher priority than the deeper targets. Hole locations that have been put forward are MAU-4* (EQ - 2**), MAU-5*, MAU - 6*, SLR-1*. EQ-3, 4, 5, 6, 9** and MAP-1. The sites with a single asterisk are proposed by Sarnthein et al., those with a double asterisk by W. Ruddiman. MAP-1 has been proposed by P. Weaver and R. Kidd. MAU-4, 5 and 6 and MAP-1 are well surveyed. Jones and Weigel will investigate the adequacy of surveys over the remaining sites as soon as possible.

XIV. SITE SURVEYS: NORTHERN BARBADOS FOREARC

Two primary locations are proposed: a site close to 541/542 drilled on Leg 78A, to penetrate the oceanic basement beneath the decollement and a site near DSDP 543 to obtain an oceanic reference section to the east of the deformation front. The former lies on a long multichannel seismic profile (CEPM 128; Appendix H). The IFP seismic data have defined in detail the structure of the entire sedimentary section in the vicinity of the drill-sites. Further site surveys are considered unnecessary.

XV. SITE SURVEYS IN REGIONS PROPOSED FOR LEGS 111-113

(i) Lesser Antilles Forearc

A prospectus by R. C. Speed, G. K. Westbrook, A. Mascle and J. C. Moore on the drill-sites in this area was tabled. Eighteen locations, some with nearby alternatives, are included, the positions of which are shown in Appendix H). The area is covered by a network of closely-spaced seismic tracks, each site lying on cross-lines. Jones reviewed large-scale copies of multichannel seismic data and GLORIA

sonographs provided by G. Westbrook. In view of the dense coverage with high-quality seismic data the panel was in agreement that no additional site surveys are needed.

(ii) Ionian Sea

R. Sartori described seismic data along the transect between the Malta escarpment and the Hellenic Arc. Information is available from IFP,OGS (Trieste) and CNEOX. In addition, GLORIA readings have been obtained from this area (R. Belderson and N. Kenyon). Sartori considered that the site survey data are sufficiently detailed for drill-site location. J. Orcutt reported that R/V CONRAD has very recently (March/April 1984) obtained SeaMARC recordings from the Mediterranean Ridge and also high resolution CHIRP profiles which may prove useful for locating HPC sites.

(iii) NW Africa Mesozoic

Sites have been suggested to examine pre-rift and early-rift sedimentary sections; these have to be considered by the Tectonics Panel. There is much site survey data in the region, which was reviewed by W. Weigel (FRG work) J. Orcutt (survey by D. Hayes on CONRAD in 1983) and A. Mauffret (French diving program off the Mazagan escarpment). Unless radically new sites are proposed no further surveys are necessary.

(iv) Yucatan Basin

Because the targets proposed by J. Austin and R. Buffler are deep the Yucatan Basin will be by-passed at the earliest stages of the programme but it will be as a candidate

area for drilling after completion of holes in the northern Barbados forearc. All sites suggested have been closely surveyed.

(v) Venezuela/Columbia Basins

3 groups of holes have been proposed to investigate the basement and sedimentary history of (a) the Aves Ridge (b) the rough and smooth basement areas of the Venezuela Basin and (c) the Columbia Basin. In each region seismic records of excellent quality are available from IFP, the University of Texas (UTMI), as well as detailed regional geophysical data.

(vi) Costa Rica

Sites in this area have already been surveyed by UTMI.

(vii) Site 504B

The main objectives are to achieve appreciably greater drilling penetration than previously and to run a number of downhole geophysical experiments. The main concern of the Site Survey Panel in this instance is the lack of deep structural information in the vicinity of the site. The Panel strongly recommends that studies of the velocity structure to examine both vertical and lateral heterogeneities beneath site 504B should be made. The timing of the studies in relation to drilling is not critical, except for any downhole experiments that require shots to be fired from a second vessel. Jones agreed to investigate the latter requirement.

(viii) Peru/Chile Trench

The surveys around sites in this area were discussed at earlier meetings of the Panel. A JOI-funded survey by the Hawaii Institute of Geophysics is expected to take place this October (D. Hussong). Processing of the multichannel data will be carried out at the University of Tulsa.

(ix) Chile Triple Junction

As the Panel has earlier emphasized, this region has the smallest amount of survey data of any area proposed for drilling in 1985-86. The high priority holes are situated between 45°S and 48°S on the landward side of the Chile Trench. In addition, drilling locations are also proposed for the region in which the crest of the Chile Rise meets the inner wall of the trench. To provide an adequate amount of information for examining the safety aspects of drilling (a bottom simulating reflector is present), high resolution and multichannel seismic lines will need to be shot and heat flow measurements must be made. Because of topographic complexities SEABEAM, SeaMARC and/or GLORIA data should be acquired. A request for proposals for a US vessel to undertake site survey work has been issued by JOI. The responses will be considered in June.

(x) East Pacific Rise at 13°N

J. Orcutt reviewed the extent of data coverage. The region has been closely studied using a wide variety of techniques. Further site surveys to specify drilling locations are unnecessary.

XVI. LONG-TERM DRILLING PLANS: IMPLICATIONS FOR SITE SURVEYS

No definite plans have been made for the track of the drilling vessel after operations in the Weddell Sea. The most likely route will involve drilling in the Indian Ocean in 1987 and, in the austral summer of 1987/88, work in the Kerguelen area. This may then be followed by further drilling in the Indian Ocean before the vessel moves into the Western Pacific.

Of immediate concern to the Panel are the surveys which must now be planned for the Indian Ocean, including the Kerguelen region. The Panel agreed to set up two site survey working groups as follows:

1. Working Group for Southern Oceans' Site Surveys

Requirements: To examine site survey needs for drilling in the Southern Indian Ocean (Kerguelen Plateau - Gaussberg Ridge region) and to maintain survey co-ordination for sites in the southern South Atlantic and Weddell Sea. To co-ordinate activities with the relevant regional panels (Southern Oceans, Indian Ocean) and thematic panels (Tectonics, Sediments and Ocean History, Lithosphere)

Membership To consist of members nominated by the chairmen of the panels above, together with W. Weigel and C. Brenner from the Site Survey Panel.

2. Working Group for Indian Ocean Surveys

Requirements: To examine site survey needs for drilling in the Indian Ocean north of the Kerguelen Plateau. To co-ordinate activities with the Indian Ocean and the three thematic panels.

Membership: To consist of members nominated by chairmen of the Indian Ocean and thematic panels together with A. Mauffret, J. Peirce and C. Brenner from the Site Survey Panel.

XVII RESEARCH VESSEL MOVEMENTS 1984-86

Particular attention was paid to the plans for geophysical and geological investigations, generally of a regional nature, in which some site survey work could be incorporated. National plans are as follows:

FRG

- (a) Norwegian Sea A POLARSTERN cruise will take place in August and September 1984. Sampling of sediments and outcrops will be undertaken in the Fram Strait, Lofoten Basin and in the vicinity of the Jan Mayen Ridge. On the latter, a deep-towed seismic array will be deployed, together with ocean bottom seismometers. The deep crustal structure and the distribution of dipping reflectors will be investigated.
- (b) Weddell Sea Work from POLARSTERN is scheduled for the Austral Summer 1985 (including water gun and deep-towed array) and refraction seismic programmes are planned to investigate the ocean/continent transition off Antarctica.
- (c) Indian Ocean Proposals for work in the Indian Ocean have been submitted and are still under consideration.
- (d) Pacific F.S. SONNE will be working in the Western Pacific in late 1984/early 1985. Areas to be studied are the South China Sea, Phillipine Sea, Ryukyu Trench (refraction with ocean bottom seismometers; seismic reflection, gravity, magnetics). Part of the work is

being carried out in Hokkaido University.

A summary of site surveys related to future drilling proposals is included in Appendix I.

U.S.

J. Orcutt reported that US vessels will be working in the following regions over the next twelve months:

Red Sea Survey of the northern part of the Red Sea (J. Cochran): Summer 1984. R. V. CONRAD.

Kane Fracture Zone JOI-funded site survey. R.V. CONRAD.

Pacific R.V. WASHINGTON will be working in the Gulf of Alaska, Hawaiian Region, Mariannas Trench, Tonga-Kermadec Trench and along the Chile margin. Site surveys are planned for the Peru-Chile Trench and the Chile Triple Junction (see above). Two-ship experiments, OBS studies and ALVIN dives are scheduled on the East Pacific Rise at 13°N. Later, ALVIN will work on the Gorda and Juan de Fuca Ridges.

Caribbean CONRAD may join up with DISCOVERY in the Caribbean for a two-ship experiment to the east of the Antilles.

South Atlantic WASHINGTON will probably transit the South Atlantic on passage to the Indian Ocean in late 1985. There is a possibility that some of the SA sites proposed by the Southern Oceans' Panel could be surveyed at this time.

European Science Foundation

R. Sartori indicated that a co-ordinated policy of site surveys and research vessel movements still has to be established. He reported Italian plans for work in the central Mediterranean in 1984 and Dutch plans for cruises in the Western Pacific. Norwegian contributions to site surveys have been given in Section V, above.

UK

Jones outlined plans for work to be carried out on DISCOVERY, CHALLENGER and the new vessel, R.R.S. CHARLES DARWIN, during 1984/85.

Atlantic In June 1984 Dr R. Scrutton on CHALLENGER will be undertaking further single-channel seismic surveys in the vicinity of recent drilling sites in the Rockall Trough.

A further elucidation of the relation between the lithostratigraphy and seismic reflectors will be attempted. Later in the summer 2-ship seismic experiments (expanding spread and constant offset) in the Rockall Trough and on the western side of the Rockall Plateau are scheduled in a Cambridge/Durham programme. G. Westbrook has indicated that he has been allocated sea-time on a NERC vessel to carry out multichannel seismic investigations (2-ship with CONRAD and single channel) east of the Lesser Antilles (mid-May to mid-June 1985). In 1985, also, Jones will be working south of the Cape Verde Islands (seismic, gravity, magnetics, sampling) and will aim to carry out some site specific seismic studies in the vicinity of Kane Gap and on the Sierra Leone Rise.

Weddell Sea The DISCOVERY programme for 1984/85 organized by Dr. P. Barker, is given in Section V above.

Indian Ocean The final programme for a NERC vessel to work in the Indian Ocean in 1985 has not been released. Programmes which have been funded include a study of the Makran accretionary prism (R. White and J. Leggett), the Indus cone and the mid-ocean triple junction (IOS Gloria survey). Further details of the Indian Ocean programme will be circulated by Jones as soon as it is available.

Canada

J. Peirce reported the general movements of Canadian vessels over the next year. Site specific surveys have already been discussed (Section X, above). C.S.S. HUDSON, carrying a SeaMARC system, will be taking part in the detailed surveys of the Kane Fracture Zone later this year (see Section XI). Final ship programmes for 1985 have not yet been released. HUDSON is expected to work in the Bermuda region and in the Caribbean. PARIZEAU will be operating off the western margin of Canada (Juan de Fuca Ridge, Queen Charlotte Fault) and may work off Japan in 1986.

France

A. Mauffret indicated that JEAN CHARCOT will be operating in the following regions: Red Sea (SEABEAM survey), Indian Ocean triple junction, Java Trench and environs, Japan Trench (in conjunction with the submersible SP98, Peru/Chile Trench. MARION DU FREND is scheduled to work in the Mozambique Channel, including

the Davy Ridge and on the Kerguelen Plateau (organizer R. Schlich). Two regions scheduled for drilling are to be investigated by submersible in 1985-86, the Tyrrhenian Sea and the Galicia margin. More detailed information will be supplied at the next Panel meeting.

XVIII

DATE AND PLACE OF NEXT PANEL MEETING

28-29 November; Scripps Institution of Oceanography

J. Orcutt kindly agreed to make the local arrangements once the meeting has had formal approval. Items to be included on the agenda are given in Appendix J.

E. J. W. Jones

June 7 1984

May 24, 1984

Dr. John Jones, Chairman
JOIDES Site Survey Panel
Department of Geology, University College
London, WC1E 6BT
ENGLAND

Dear John:

We are developing a "state-of-the-art" seismic system at TAMU that will be an improvement over the system previously used onboard D/V GLOMAR CHALLENGER.

The SEDCO/BP 471 will have a single channel seismic system that will allow recording digital data, and processing and display in real time. The seismic system will have a super-micro computer as the central unit to record and process the data, and should obtain excellent records for: 1) location of the optimum site to be drilled (where the beacon is dropped); and 2) correlation between the drilled section and the local and regional geology (by correlation of the drilled section and the local sedimentary sequence, and correlation of the drilled section to the regional site survey lives). The system will also allow for expansion as new scientific experiments will be performed in the future (e.g. vertical seismic profiling).


The basic processing done on board will consist of gain recovery, deconvolution, filtering, trace scaling, equalization and mixing. The data will be graphically displayed on a 22-inch plotter after processing. Processing and display will be done as the data is collected. The seismic sources will be water guns which will give the necessary high resolution (airguns can be used as necessary). The underway geophysics laboratory will also record and display magnetic, bathymetric and navigational data.

We believe that similar systems will be in use at the University of Texas at Austin, Scripps Institution of Oceanography, the University of Rhode Island and the U.S. Geological Survey.

There is little doubt in my mind that when implemented the system will be well received by the JOIDES community.

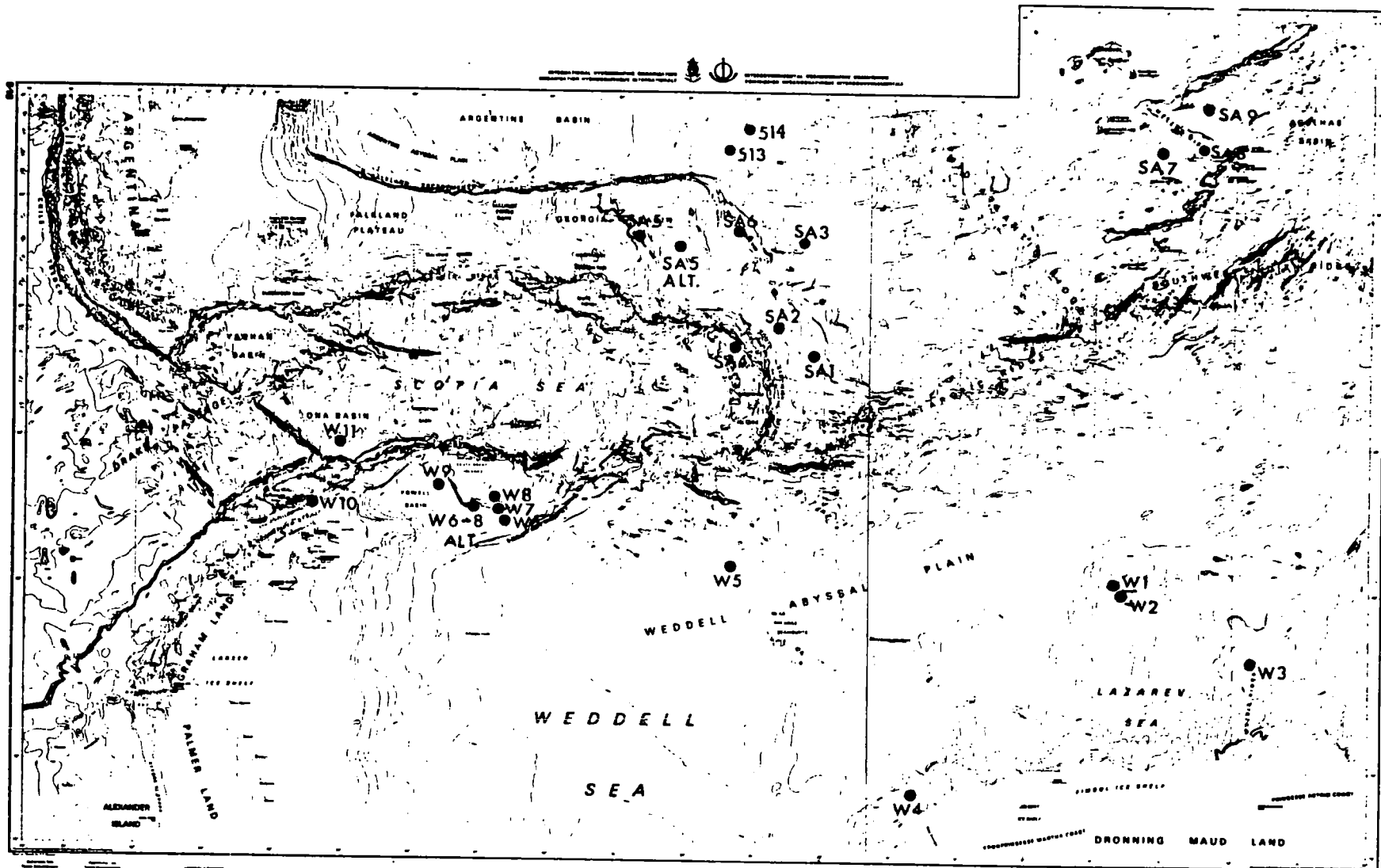
I hope you have a productive Site Survey Panel meeting in Zurich and regret not being able to attend.

Sincerely,


Philip D. Rabinowitz
Director
Ocean Drilling Program

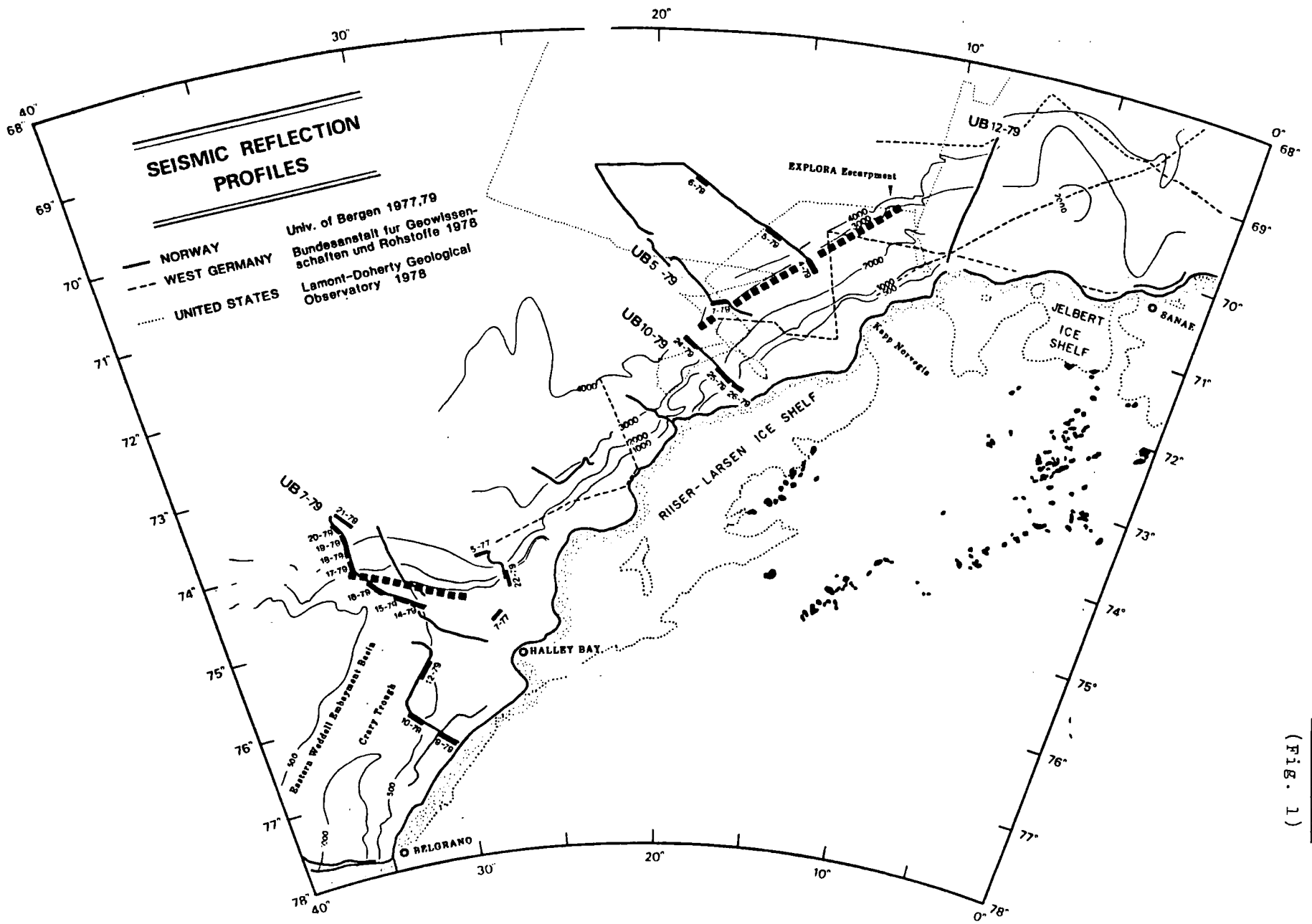
PDR:fab

ENVIRONMENTS	A PELAGIC (shallow penetration)	B SMALL BASIN / OPEN OCEAN (shallow penetration) subject to debris flow	C 1 PASSIVE MARGIN single bit		2 reef	D FORE-ARC WEDGE	E SPREADING RIDGE: zero or thin sediment cover	F OCEAN CRUST: thick sediment cover	G HIGH TEMP. ENVIRONMENT
X = vital (X) = desirable (X)* = desirable, but may be required in some cases									
<u>INSTRUMENTS</u>									
1) Air Gun SCS	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	
2) Water Gun SCS (or other high resolution system)	X	X	X	(X)	X		X or 5	X or 5	
3) 3.5 KHz.	X	X	X	(X)	(X)		(X)		
4) Chirp Sonar	(X)					(X)			
5) MCS		(X)	X	X	X		X or 2	X or 2	
6) Refraction				(X)		(X)	X		
7) Side Scan Sonar	(X)	X	(X) or (7)	(X) or (8)	(X) or (8)	X			
8) Seabeam bathymetry	(X)		(X) or (6)	(X) or (7)	(X) or (7)	X			
9) Piston Cores	X	X	(X)*	(X)	(X)	(X)	(X)	X	
10) Heat Flow			(X)*	(X)*	X	(X)*	(X)	X	
11) Magnetics/Gravity			(X)	(X)		X	X	X	
12) Dredging and/or Bare Rock Drilling						X			
13) Photography (e.g. ANGUS)						X		(X)*	
14) Submersible						(X)		(X)*	
15) Current Meter (for bottom shear)			(X)*	(X)*	(X)				



GENERAL BATHYMETRIC CHART
OF THE OCEANS (GEBCO)

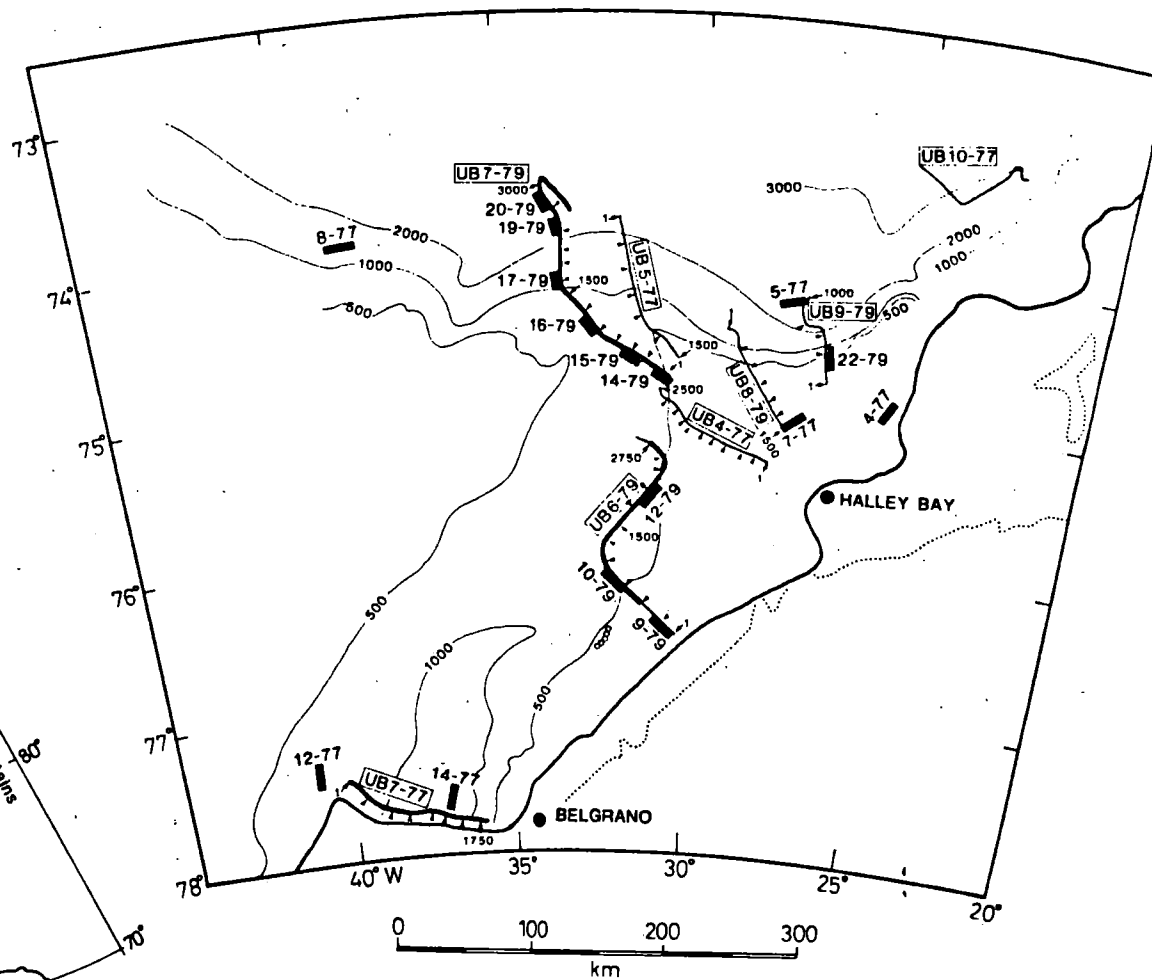
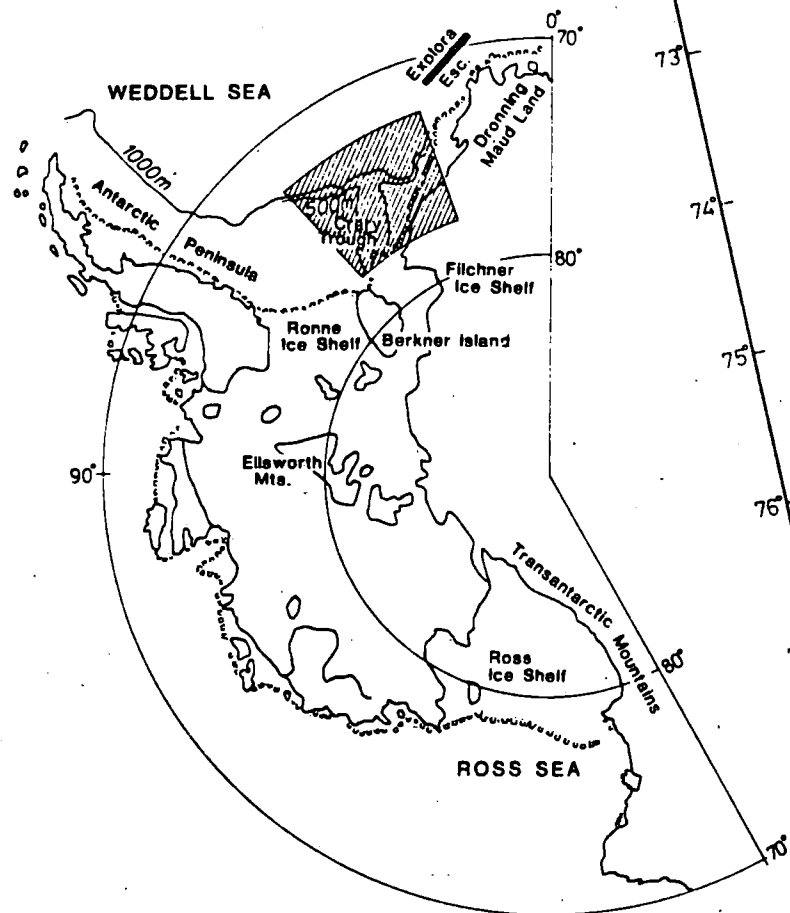
CARTE GÉNÉRALE BATHYMETRIQUE
DES OcéANS (GEBCO)



APPENDIX D
(FIG. 1)

Fig. 1.

SURVEY AREA



- Shot points
- 250 between markers
- Reflection lines 1977 & 79
- Digitized reflection lines
- Sonobuoy stations 1977 & 79
- Sparker data (see fig.4)

APPENDIX D
(Fig. 2)

PROPOSED SURVEY AREA 1984 - 85

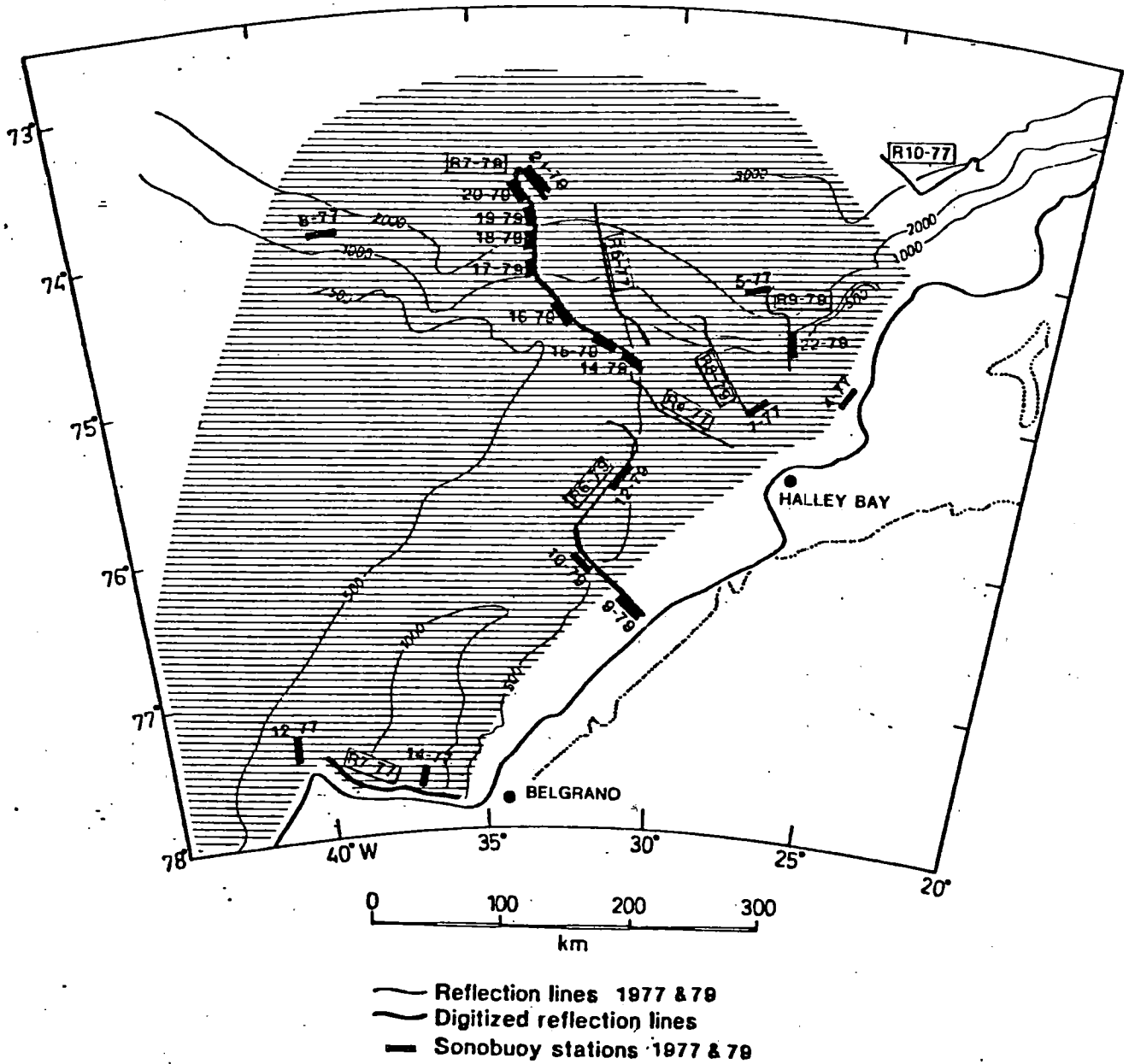


Fig. 3 Proposed survey area

APPENDIX E

SITE SURVEYS IN THE WEDDELL SEA
AND SOUTHERN SOUTH ATLANTIC

Site	Environment	Completed	Planned
W-1	A	7,9,14	6,7,8,9,10
W-2	A	7,9,14	6,7,8,9,10
W-3	C - 1	6,9	6,9
W-4	C - 1	6,9	6,9
W-5	B	6,9	1,2,6,7,8,9
W-6,7,8	C - 1	7,9,14	1,2,6,7,8,9
W-9	C - 1	9,14	No further work unless priority rises
W-10	C - 1/G	6,7,9,14	8
W-11	A	9,14	1,2
SA-4	D	7,9,14	1,2,6,7,8,9
Other SA sites	A	7,9,14	No surveys yet planned

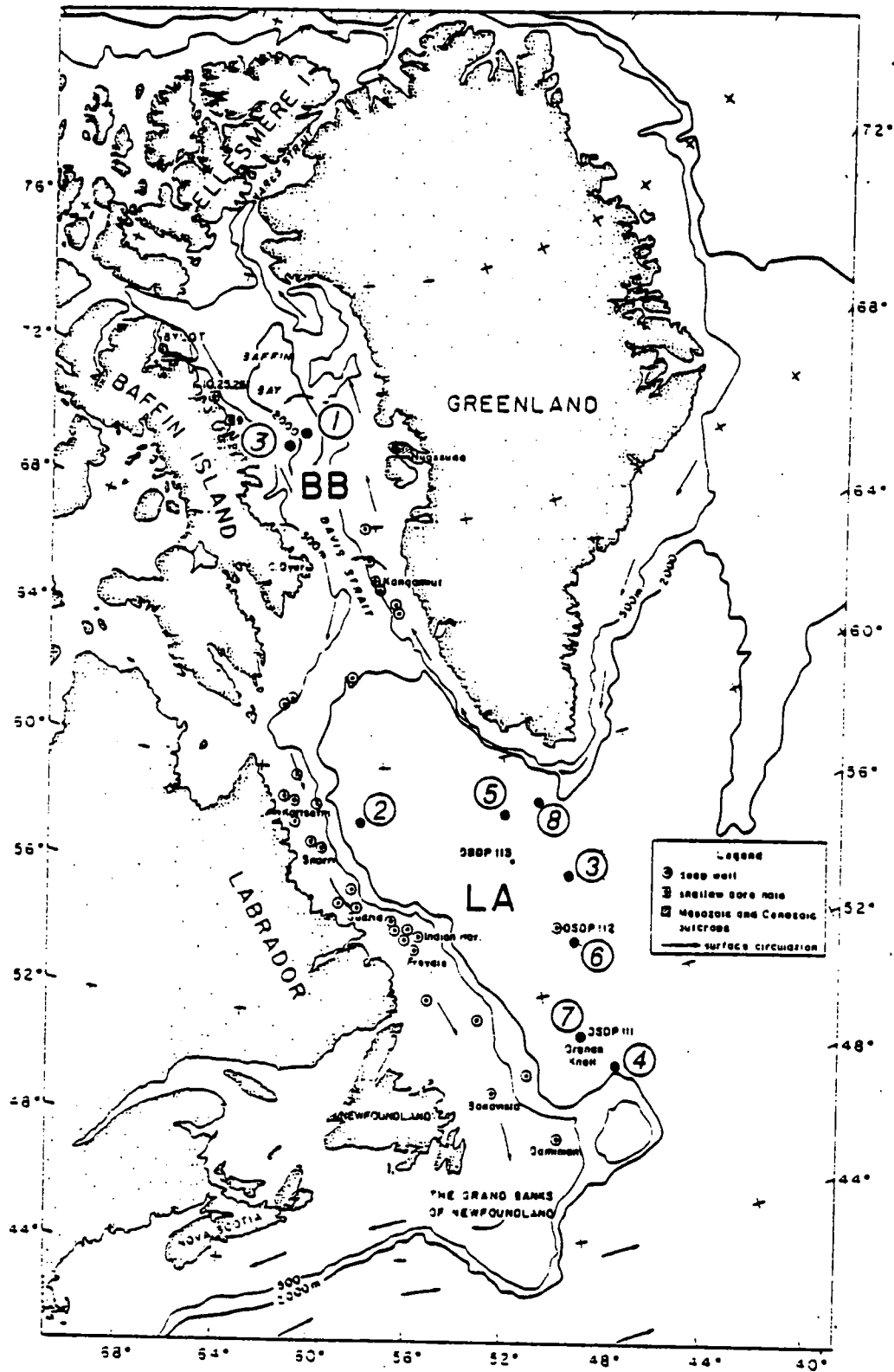


Fig. 1A. Location of proposed Labrador Sea and Baffin Bay ODP Sites.

APPENDIX F

4/1 Jones For
Minute

TO
A

DISTRIBUTION

FROM
DE

S. P. Srivastava
 Regional Reconnaissance

SECURITY - CLASSIFICATION - DE SECURITE
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YOUR FILE/VOTRE REFERENCE
DATE March 5, 1984

SUBJECT
 OBJET AODP SITE SURVEY CRUISE TO THE LABRADOR SEA - CSS HUDSON CRUISE NO.84-030

The following is a summary of the discussion which took place during and subsequent to the cruise planning meetings which were held on February 1, and March 2, 1984. If there are any omissions or inaccuracies, please let me know.

- A. Objectives and outline of the cruise.
 The objectives of the cruise are four-fold
- (1) to carry out detailed geophysical surveys and some coring at the four sites selected for deep sea drilling program in the Labrador Sea;
 - (2) to run seismic reflection tie lines between the sites and other seismic lines in the region;
 - (3) survey and coring along the Mid Ocean Channel in the Central Labrador Sea; and
 - (4) to do heat flow measurements at each of the sites.

After considerable discussion during and after the meeting, it was decided to move sites 1A and 3 to new locations. Earlier on Site 3 (DSDP hole 112) was moved 100 Km northward to a new location, 3A, because of the difficulty in tracing the sediment reflectors from site 3, which lies in rough basement terrain, onto the Labrador shelf and slope. However, site 3A lies west of the Mid Ocean Channel near Hamilton Spur and may be highly influenced by turbidity currents and thus unsuitable to meet Neogene objectives. Site 3A was thus moved to a new location south of site 3 and away from the rough basement terrain. New site 3 (called here site 6) is chosen to fulfil mainly Neogene objectives while another site (called here Site 3) was chosen in Gloria Drift region to fulfill Paleogene objectives. Site 6 lies in a region where Oligocene-Eocene reflector 'R4' has been mapped from previous surveys. Site 1A lies in a region which may have been contaminated by Paleocene volcanic flows and it was decided to move it slightly to the west (Site 5) to a region showing presence of 'typical' oceanic basement. The new sites are 5, 2, 3 and 6. In order of priority, the cruise will undertake

- (1) single channel reflection seismics at all sites.
- (2) detailed bathymetry using 12.5 and 3.5 kHz

- (3) velocity measurements at all sites, using expendable sonobuoys.
- (4) marine magnetic measurements at all sites.
- (5) site location and geophysical surveys positioning with navigation accuracy of 1 nm or less.
- (6) Minimum of 3 cores at each site.
- (7) Heat flow measurements at each site and some between sites 2 and 6 on the Labrador Shelf with a total time devoted to these measurements of three days.
- (8) survey and coring (piston and/or Box) along Mid Ocean Channel between sites 5 and 2 for a total period of 2.5 days.

Detailed geophysical surveys are to be conducted at sites 5 and 3, with less detailed surveys at Site 2.

Site 5 Approximate location 58°3'N, 48°24'W

The main objective of carrying out a detailed survey over this site is to delineate the character of the acoustic basement in as much detail as possible. The site lies in the vicinity of anomaly 23.

Survey coverage: about 320 nm of seismic and magnetic data (approximately 2.5 days).

Site 2 Approximate location 58°30'N, 57°54'W

The main objective of carrying out a seismic reflection survey over this site is for delineating reflectors in the top part of the sediment overlying the acoustic basement in as much detail as possible. High resolution seismic.

Survey coverage: about 120 nm of seismic and magnetic data (approximately 1.0 days).

Site 3 Approximate location 56°12'N, 44°08'W

The main objective of carrying out a detailed survey over this site is to delineate the character of the acoustic basement and of the overlying sediments in as much detail as possible. The site lies in the vicinity of anomaly 21.

Survey coverage: about 300 nm of seismic and magnetic data (approximately 2.5 days).

Site 6 Approximate location 53°19'N, 45°42'W

Objective same as for site 2.

Survey coverage. about 120 nm of seismic and magnetic data (approximately 1 day).

Logistic Summary for the Cruise

Cruise time: 31 days (July 27 - Aug. 27, 1984)

ETD BIO, Dartmouth, 1000 July 27, 1984

ETA St. John's, Newfoundland 1200 Aug. 27, 1984.

Days allotment

Transit time

Halifax to Site 6	4.0 + 2.5 (seismic) =	6.5 days
Site 6 to DSDP 112 and back	Seismic	= 1.0
Site 6 to Site 3	Seismic	= 1.5
Site 3 to site 5	Seismic	= 2.0
Site 5 to Site 2	Some Seismic	= 1.0
	Combined with	
	work for MOC	
Site 2 to St. John's	No Seismic	= 2.5

Total = 14.5 days

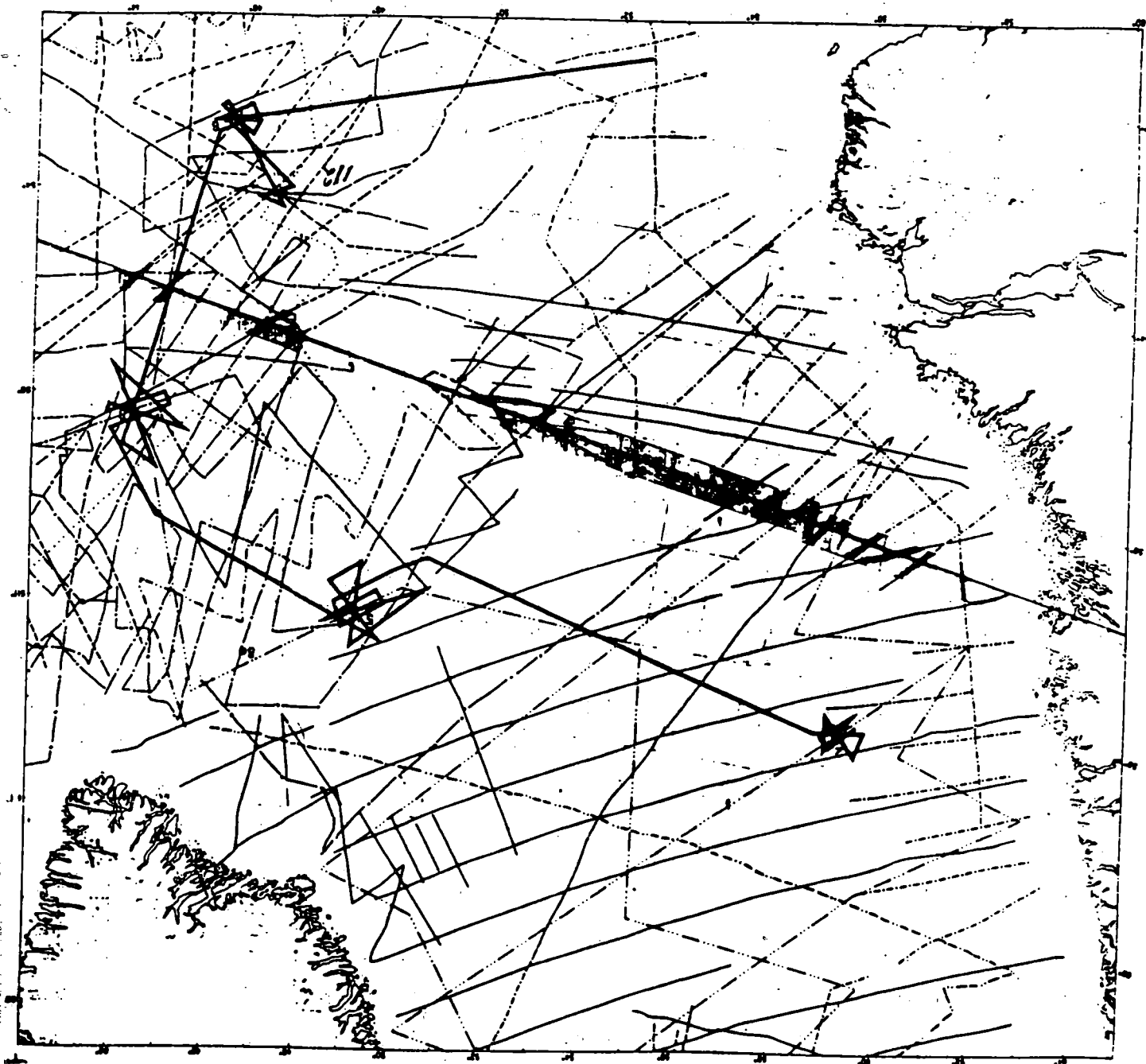
Survey and Coring time

Site survey at 6	1.0 day
Site survey at 3	2.5
Site survey at 5	2.5
Site survey at 2	1.0
Coring at sites	3.5
Heat flow measurements	3.0
MOC work	2.5

Total 16.0 days

Total time 30.5 days

Figures 1 and 2 show the proposed tracks in the area and over the sites respectively.



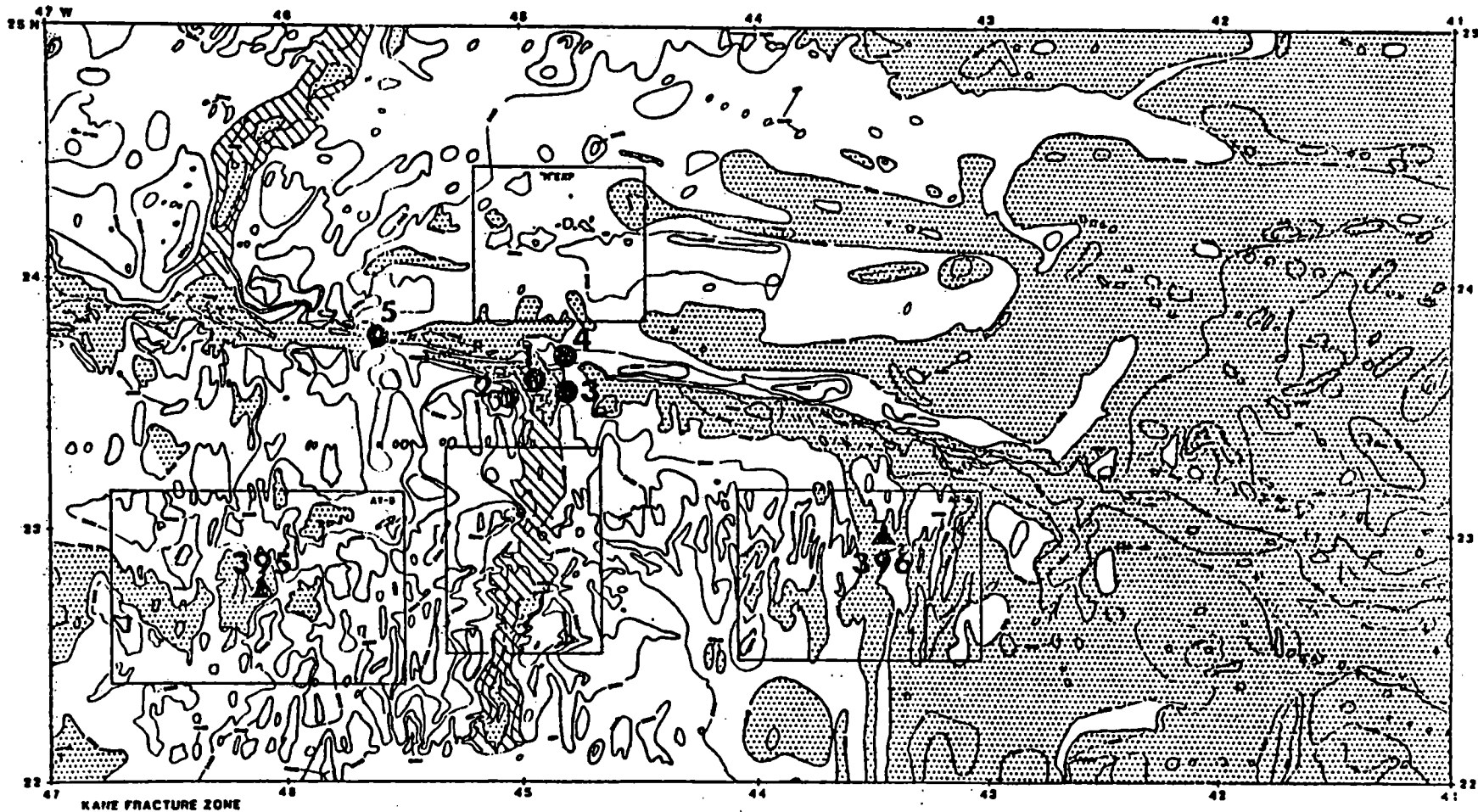


Figure 8 - Location of potential drill sites at the KFZ recommended by the Ocean Crust Panel in their last meeting in Halifax, Nova Scotia in August, 1983.

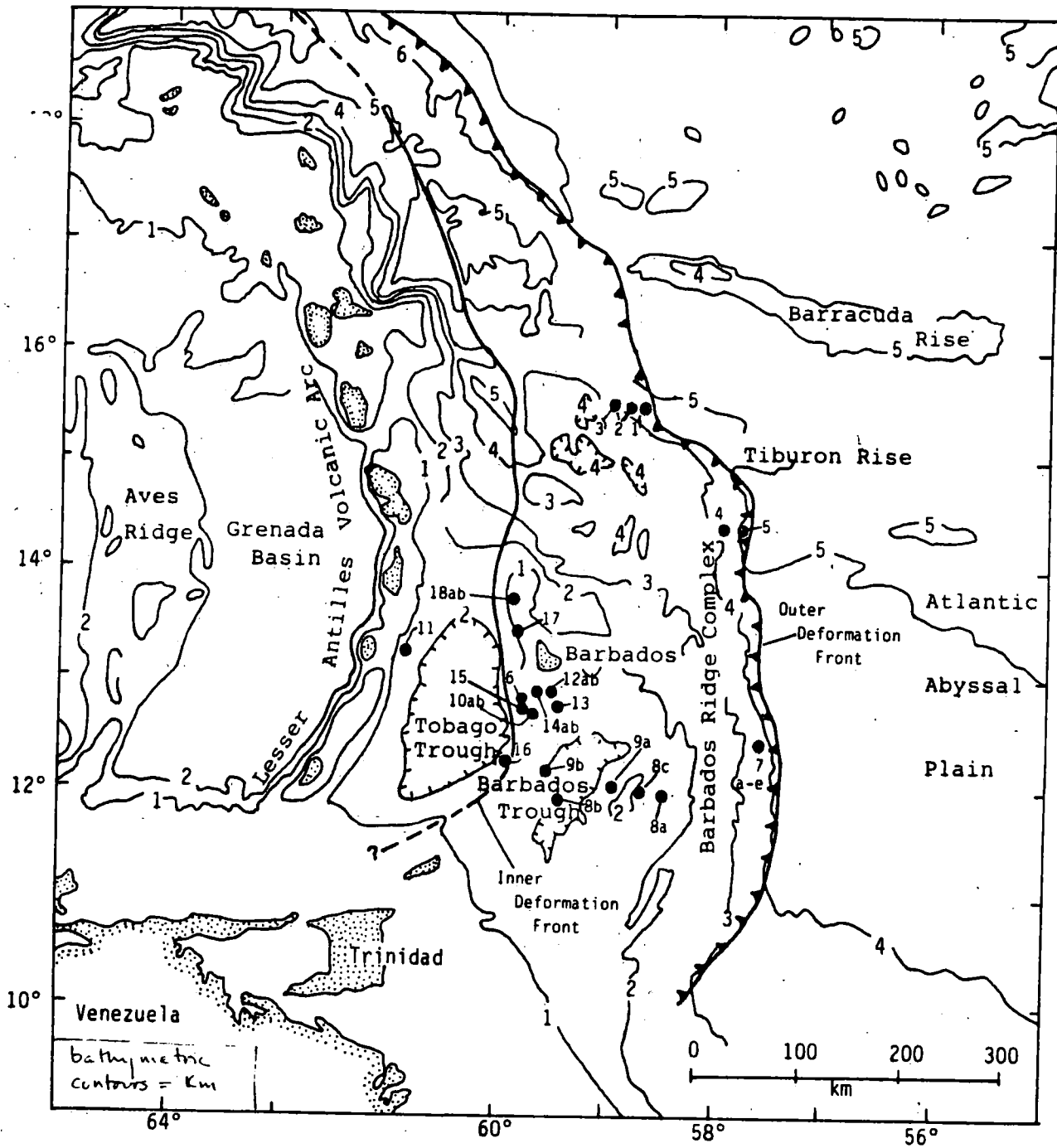
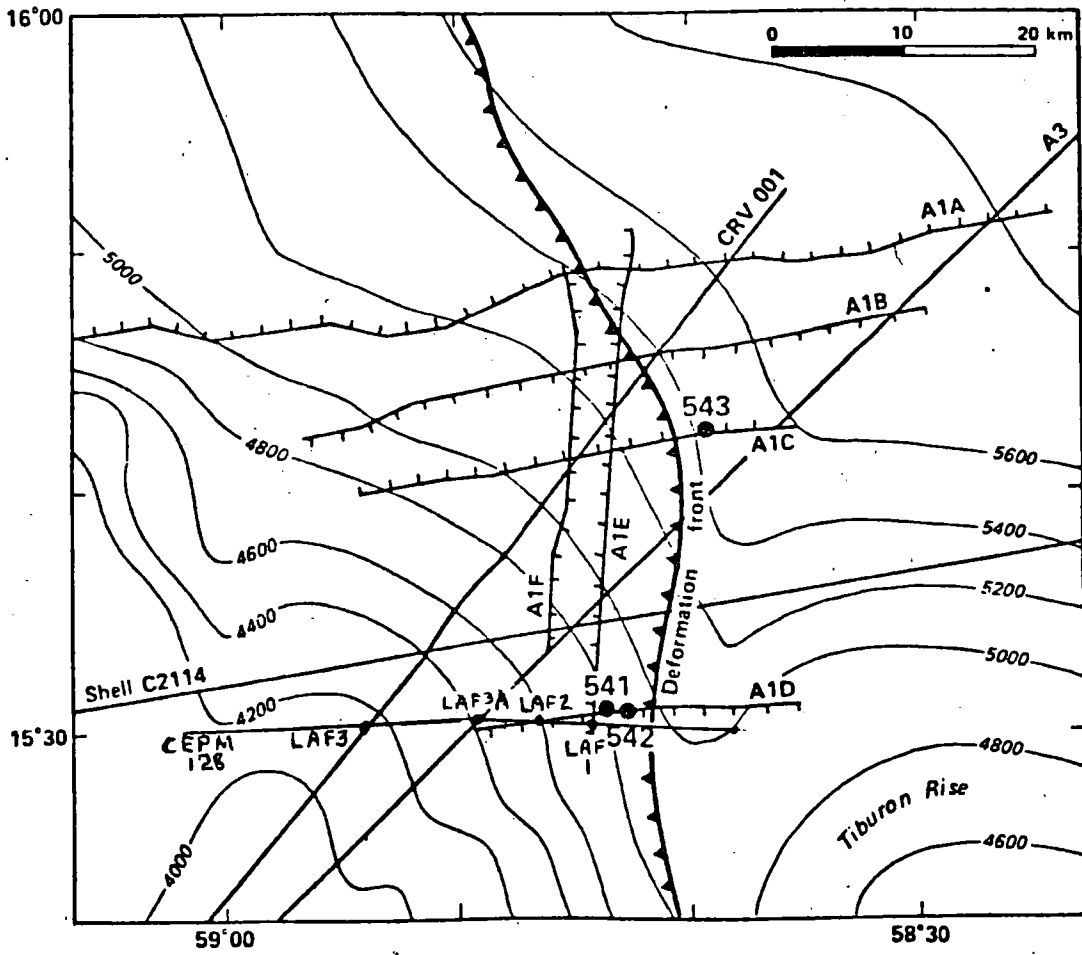


Figure II-1: Positions of sites LAF 1-18 in Lesser Antilles forearc.



- 541-3 Leg 78A SITES
- LAF 1...3 Proposed Sites

Figure 3

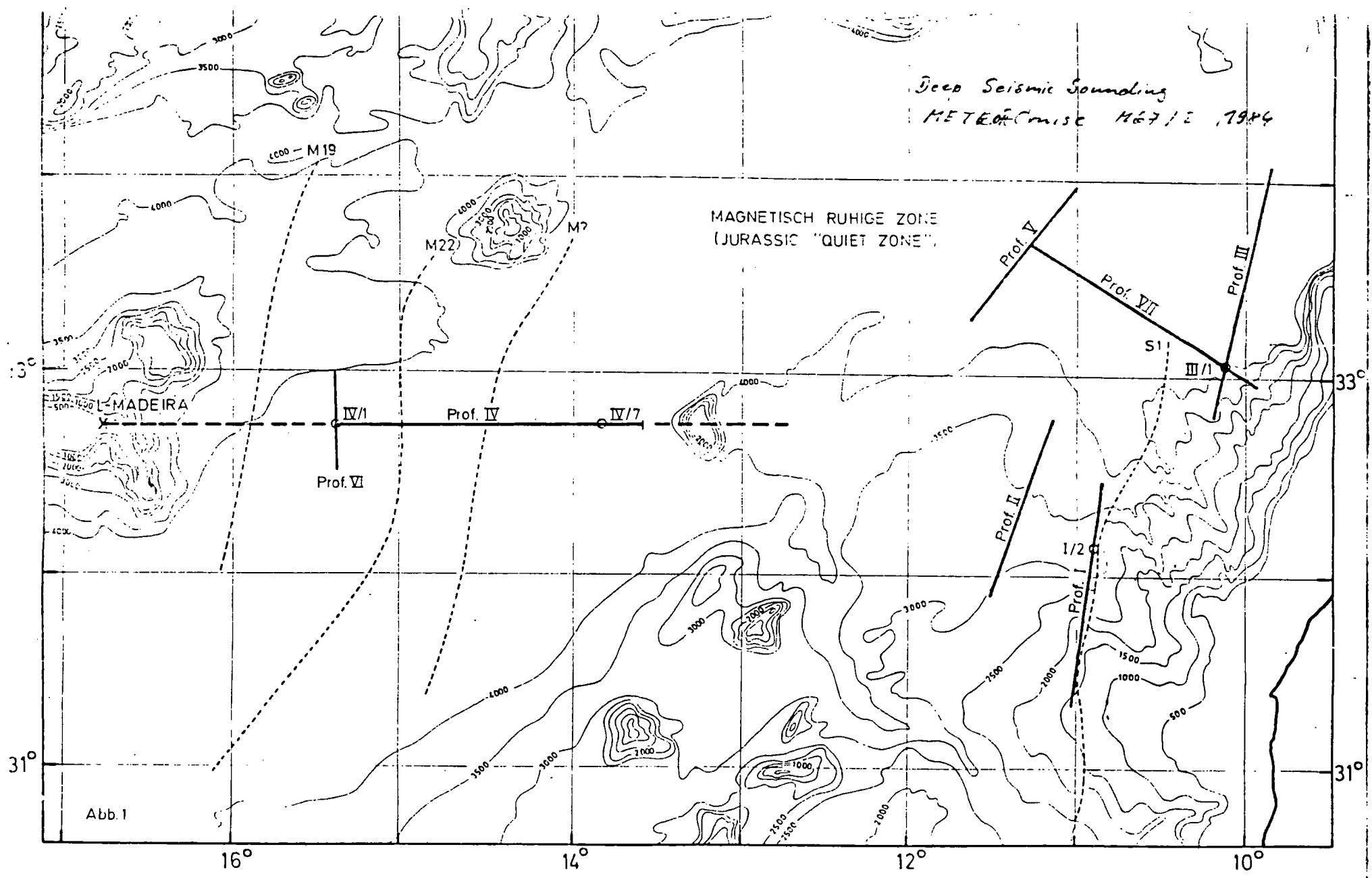
FRG: (W. Witzel)

APPENDIX I

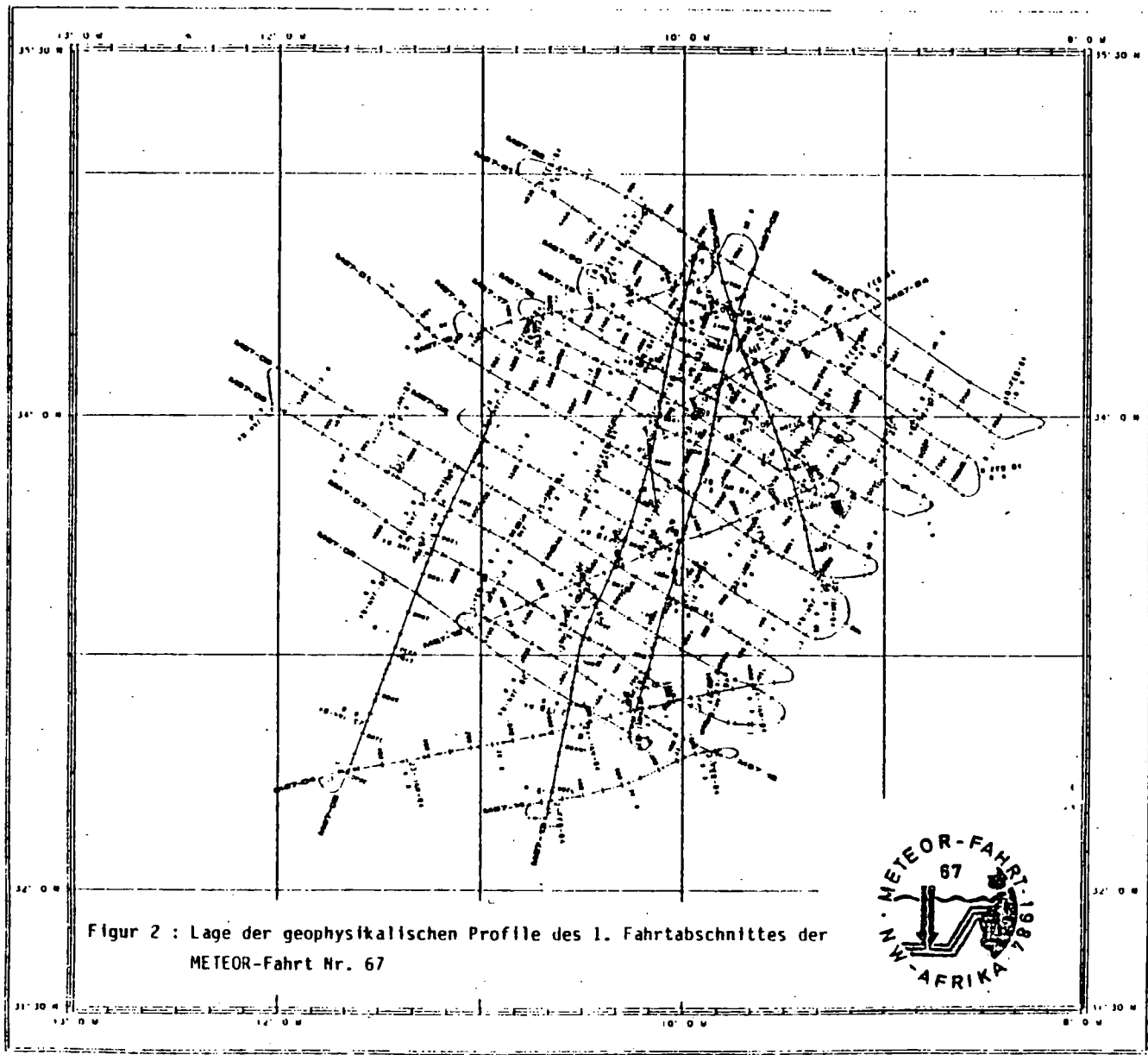
Site Surveys:

Region	Proposals	past survey (year) planned survey year	targets	method
Bahamas	nine target areas Fig. 1, SSP Meeting WHO reflect. Lines in area 9, lowest priority	SIV 'Prospecta', R/V 'Frod. H. Moore' (1981) planned survey: —	carbonat- platform	two ship digit. seis- Expr. CDP, ESP by LOGO a- BGR
Barbados	no BGR (FRG)	Data in proposed	region	
Labrador Sea	Site 2 on BGR-line 2 Site 5 on BGR-line 2 Site 8 on BGR-line 2 Site 1a, 1b " "	(1977) planned survey: —	nature of ac. basement, history of opening, calibration of magnetic lines paleoenvironment, ocean crust	multichan- reflective magnetics
Norwegian Sea	Sites VPR 1, 2a, 2b (detailed proposal prepared by Norw. Working group, further results: LOGO, France)	(1983)	nature of sea- ward dipping; K-reflector, base of dipping	two ship digit. seis- LOGO, BGR gravity, magnetics
Mediterranean	Mediterranean working group: Ligurian Sea (Tyrrhenian Sea) (Transsect) Ionian Sea Alboran Sea	European Sectr. (1983) 1984 METEOR 1978 SONNE 30	compare proposals of the Med. working group (Vield, Hensen Ridge, Malta Etc. Medit. Ridge)	single chan- nel refl. (C.C.) 3,5 KHZ Sea Beam
NW-Africa	New sites will be proposed: Sites 135R 139R NAU 1, 4, 5, 6, 7 SLR 1 (Sierra Leone Rise)	METEOR, VALDIVIA (1975-1980) METEOR (1984) planned survey: — compare March 84, Site Proposals: Santheim, Hinz, v. Rad, Wissmann, Fänger	transition zone ocean/continent ST-anomaly paleoenviron- ment, upwelling, paleo deep sea circulation	Multichan- Refraction Gravity magnetic
Weddell Sea	South Atlantic working group: W1 - W5 Sites W3, W4, W5 on BGR - multi- channel - lines	BGR (1978) (Moltischeimel) ISPOLARSTERN 1985 86	dippings, age & nature of break up unconformity, unconformities, history of ice and sea level (paleoenvironment)	Single Channel reflection refraction Sea Beam
Indian Ocean	Proposals of Ind. Oc. Panel.	Time and ships of survey not yet fixed. Plans are dis- cussed and prepared	Intraplate de- formations Active plate boundary, pass. margin Australia, E-Africa, dipping reflectors (Ind. b)	geophys. methods
Pacific	Ryukyu Trench (Holtkard's Univers. Univers. Hamburg) drilling proposals planned	FS 'SONNE' 1984	Active margin subduction zone	Refraction gravity

Deep Seismic Sounding
METEOR Cruise 467/E, 1944



Handwritten notes:
Mittelmeer
Südwest
Südost



Figur 2 : Lage der geophysikalischen Profile des 1. Fahrtabschnittes der METEOR-Fahrt Nr. 67



APPENDIX J

Items to be included on the agenda for a meeting of the
Site Survey Panel, Scripps Institution of Oceanography:

28 - 29 November 1984

1. Report from South Oceans' Working Group on Site Surveys
(including South Atlantic and Southern Indian Ocean) (W.W.)
2. Report from Indian Ocean Working Group on Site Surveys (J.P.)
3. Report from E. Silva on West Pacific Panel discussions
4. Sites surveys off Western South America (E.S.)
5. Site surveys: Central and east Pacific (J.O.)
6. Site surveys: Kane Fracture Zone (J.O.)
7. Site surveys: Baffin Bay and Labrador Sea (J.P.)
8. Site surveys: Mediterranean (R.S.)
9. Report from PCOM (R.L.)
10. Movements of research vessels 1985-87
11. Instrumental developments (to include report on use of
drill-ship as a platform for geophysical experiments)
12. Site surveys for riser drilling (J.P.)