

MINUTES OF A
MEETING OF THE JOIDES SITE SURVEY PANEL

Woods Hole Oceanographic Institution, Mass.

November 28-29, 1983

PRESENT: Panel Members

J Austin (representing Dr F Duennebier)
(US)

E J W Jones (UK) - Chairman

J W Pierce (Canada)

PCOM Representative

J Honnorez (PCOM Chairman)

Ex-Officio and Guests

C Brenner (IPOD Data Bank)

J Clotworthy (JOI)

O Eldholm (Norw. Sea W G)

L Garrison (TAMU)

J Karson (WHOI)

J Ladd (Lamont)

I. CHAIRMAN'S INTRODUCTION

In introducing a long agenda the Chairman emphasized that the meeting had two main purposes:

- (i) To reach an early and firm decision on an internationally co-ordinated survey plan to cover all sites proposed for the first 28 months of the new ocean drilling program.
- (ii) To examine all site survey requirements (geographic and technical) beyond January 1987.

The Chairman welcomed a new Panel member, Dr John Pierce, representing Canada. The Chairman very much regretted the absences of Drs Nagumo (SSP, Japan), Renard (SSP, France) and Weigel (SSP, FRG) who, owing to unforeseen circumstances, were unable to travel to Woods Hole. He conveyed their apologies to the meeting, indicating that he would be able to report in outline French and German input to the site survey program later in the meeting.

II. OCEAN DRILLING PROGRAM, OCT. 1984 - JAN. 1987

J Honnarez discussed the track for drilling from October 1984. For the first six months the vessel will remain close to the USA for logistic reasons. The route is as follows:

<u>1984</u>	Oct.	Gulf of Mexico
	Nov.	Gulf of Mexico
	Dec.	Bahamas Platform
<u>1985</u>	Jan.	Bahamas Platform
	Feb.	Barbados
	March	Barbados
	April	Mid-Atlantic Ridge
	May	Mid-Atlantic Ridge
	June	Labrador Sea

<u>1985</u>	July	Labrador Sea
	Aug.	Norwegian Sea
	Sept.	Norwegian Sea
	Oct.	Mediterranean Sea
	Nov.	Mediterranean Sea
	Dec.	Mediterranean Sea
<u>1986</u>	Jan.	Mediterranean Sea
	Feb.	N W Africa
	March	N W Africa
	April	Venezuela/Columbia Basins
	May	Venezuela/Columbia Basins
	June	504B
	July	504B
	Aug.	Peru-Chile Trench
	Sept.	Peru-Chile Trench
	Oct.	Chile Triple Junction
	Nov.	Chile Triple Junction
	Dec.	Weddell Sea
<u>1987</u>	Jan.	Weddell Sea

Only the first six legs are presently regarded as definite. Later legs will be discussed at the January 1984 PCOM meeting.

III. SITE SURVEYS: GULF OF MEXICO

Drilling sites have been selected to examine two main aspects of Gulf geology - (i) sedimentation in relation to the early evolution of the Gulf of Mexico and (ii) biostratigraphy, facies patterns and palaeo-oceanography during the late Mesozoic and Cenozoic. At each location there must be a sufficient density of multichannel seismic lines to enable detailed mapping of important reflectors to be carried out. Main reflectors must be tied into the regional stratigraphic framework. The surveys at sites concentrating on problem (ii) above should provide high-resolution single-channel seismic reflection recordings, partly with a deep-towed source. Piston coring and dredging at some margin sites should be part of the site survey program.

The Panel recommends that the Gulf of Mexico sites should be surveyed before July 1984 to allow adequate time for data preparation prior to drilling.

No European ships will be in the area by that time. US contributions to Gulf of Mexico surveys will be discussed at the forthcoming JOI Site Survey Panel meeting on December 3 1983. J Austin pointed out that there may be problems in gaining clearance to do some of the surveys in time for drilling. Several prime sites are within waters under Cuban or Mexican jurisdiction.

IV SITE SURVEYS: BAHAMAS

Nine target areas for drilling in this region are indicated on Figure 1. Also shown are the tracks of available multichannel profiles. Area 9, which lies close to USGS seismic line TD5 (Paull and Dillon), has been designated of lowest priority. A JOI RFP for site surveys in this region was issued in August 1983. A decision is expected shortly to enable completion of surveys by August 1984. At a recent meeting of European members of the Site Survey Panel (October 10 - 11, Paris), V Renard indicated that French Seabeam data, principally over the Blake-Bahama escarpment, are available. W Weigel had reported that German multichannel seismic has been acquired by K Hinz's group. W Schlager, one of the site proponents, is now aware of the new information and is currently trying to gain access to it.

V BARBADOS

Sites currently proposed for this area are well surveyed (multichannel seismic, Seabeam and/or Gloria).

The Panel recommends that no further site specific surveying be considered until the sites and the data in their vicinities have been reviewed by the new Tectonics Panel (Chairman J Leggett)

VI MID-ATLANTIC RIDGE

J Karson reported that drilling on the Mid-Atlantic Ridge had been fully discussed at an Ocean Crust Panel meeting in August 1983. Two groups of sites were approved, each depending on whether a bare-rock drilling capability exists by April 1985. If re-entry bare-rock drilling was

possible then OCP recommended drilling a deep hole in the FAMOUS area. If re-entry at a bare-rock site was not feasible then ridge crest sites on the Kane Fracture Zone (23° - 24° N) should receive first priority. Should bare-rock drilling not be possible then sites with a sediment cover near the Kane transform are to be drilled.

J Karson reviewed the available geophysical/geological data (including submersible dives) in the Kane Fracture Zone area, relating his observations to models of fracture zone evolution. He drew particular attention to the plutonic rocks which are either exposed or buried by only a few metres of sediments in the Kane area. Five sites are proposed to examine the structural history and petrology of the region. These are shown in Figure 2.

It is clear that normal surface-ship echo-sounder data are not sufficient to define sites for bare-rock drilling; the topography is complex and structures show evidence of rapid lateral changes. Seabeam and/or Gloria data is essential before bare-rock drilling is considered. CNEXO has one Seabeam profile across the Kane Transform near 45° $40'$ W and the Institute of Oceanographic Sciences (UK) has good Gloria coverage of at least part of the active transform. J Karson will contact CNEXO and R Searle at IOS for further information on data availability.

The following survey data are considered essential for locating sites in the Kane FZ area:

- (i) Seabeam/Seamarc bathymetry covering a 20 km region around each drillsite in Figure 2, with extensions of surveys to examine (a) the eastern ridge/transform intersection and (b) as much as possible of the active transform to the west .
- (ii) Deep-towed, "high" frequency seismic to map sediment ponds, in case bare-rock drilling is not feasible
- (iii) Further bottom photography near proposed sites
- (iv) Synthesis of all magnetic data in region to obtain detailed information on slip rates along the transform

Jones, Weigel and Renard will investigate further European sources of data from this area. An RFP for US work around the Kane sites will be written by the JOI Site Survey Panel. J Clotworthy and J Austin presented a preliminary draft.

VII LABRADOR SEA

J Pierce gave a detailed report of Canadian survey activity in this region, indicating five high priority drill-sites (Figure 3), three of which lie within 200 miles of Greenland. Sites 1A, 1B and 5 lie southwest of Cape Farewell and have been selected to examine old oceanic crust and Cenozoic oceanography (Arctic overflow, in particular). Sites 2 and 3 lie on the Labrador margin, an area in which there is considerable interest in the Neogene (Site 2) and Palaeogene (Site 3) structural and oceanographic development. Site 4 is located north of Orphan Knoll and has been proposed in order to examine a possible anomalous subsidence history.

FRG has made available multichannel seismic profiles through sites 5, 1A and 1B and across site 2. Site 3 appears to lie on oceanic crust and has single channel coverage only. IOS has acquired Gloria and some seismic data in the region. J Pierce indicated that the Canadian vessel HUDSON will be working in the Labrador Sea in July and August 1984 (K Loudon and S Srivastava) and plan to carry out seismic, coring and heat flow measurements off Cape Farewell and Labrador to provide more detailed data for site selection. Pierce pointed out the difficulties in picking optimum sites because of probable thick lava sequences intercalated in the main sedimentary section. Such flat-bedded, volcanic reflectors are often indistinguishable from genuine sedimentary horizons. The forthcoming HUDSON survey will aim to pinpoint regions where the lavas are thin or absent and the sedimentary section is as complete as possible.

VIII NORWEGIAN SEA

O Eldholm, Chairman of the newly-established Norwegian Sea working group, reviewed the objectives of drilling between Iceland and Spitzbergen. Three principal sites on the Norwegian margin are proposed for August/September 1985, the prime aim being to determine the age and nature of

the "dipping-reflector" sequence. Figure 4 shows their location. Two holes are situated NW of the Voring Plateau escarpment, the most westerly lying on anomaly 24. The third hole is located about 200 miles to the Northeast, in the Lofoten Basin, where it should be possible to reach the top of the dipping reflector sequence in a quite different structural setting. Other sites being considered fall on the Jan Mayen Ridge north of Iceland.

Each proposed site has good multichannel seismic coverage (Norwegian, BGR, US and French data, compiled by Site Survey Panel in 1981), together with gravity and magnetics. Further site surveying will be discussed at the Working Group meeting in February, but the present Panel agreed that such work is unlikely to be necessary.

IX MEDITERRANEAN SEA

The following proposals have been received for drilling in the Mediterranean: Tyrrhenian Sea (back arc basin formation), Hellenic basin and environs (study of Tethyan circulation patterns), an E-W drilling transect near the axis of the Mediterranean.

These and other proposals will be examined and put in order of priority at a Working Group meeting (Chairman Professor Jean Mascle) in January or February 1984. A detailed discussion on site surveys will be deferred until the WG has met. It was noted that Cyana diving operations will be taking place in the Tyrrhenian Sea during August 1984. Jones indicated that IOS Gloria coverage in some of the areas proposed for drilling is excellent. Site proponents should contact R Belderson and N Kenyon for further information.

X NW AFRICA

A large amount of site survey data is available for this region, including a 1983 JOI-funded survey (D Hayes, Lamont). Further survey work in direct relation to drilling is unnecessary unless radically new sites are proposed by the incoming thematic committees.

XI VENEZUELA/COLUMBIA BASINS

Seven Caribbean sites have been proposed: CAR I (Barbados), Grenada Basin (1), Venezuela Basin (2), Columbia and Yucatan basins (2) and the Tobago Trough (1). Multichannel data over each site has been acquired by the University of Texas and IFP. Further site surveys are probably not needed but the Panel must await the new Working Group recommendations. The Panel indicated that there must be members on the WG with a strong site survey interest. The following were suggested to PCOM: J Ladd, A Salvador, G Westbrook, E Rosencrantz, J Case, K Burke.

XII 504B

No further site surveys required.

XIII PERU/CHILE TRENCH AND TRIPLE JUNCTION REGION

The JOI-funded survey of the Peru/Chile Trench will be completed by August 1984. V Renard had earlier indicated that France will be able to contribute Seabeam data in this region.

The Triple Junction near 46°S , 76°W is scheduled for drilling in October/November 1986. Of all the regions so far considered for drilling this area has the smallest amount of background geophysical and geological data. Nevertheless, it is of great current interest because it is one of the few areas where we can clearly study the effects of the collision of a spreading centre with a subduction zone. The highest priority holes lie on the landward side of the Chile Trench between 45°S and 48°S .

Drilling is also proposed where the crest of the Chile Ridge intersects the inner wall of the trench.

Survey data consist mainly of Chilean ENAP seismic data on the shelf and single channel Lamont lines crossing the trench. It is clear that much more data are required to pick specific locations for drilling. Lamont data reveal a bottom simulating reflector. High resolution seismic and heat flow, in addition to multichannel seismic coverage, will be vital before site proposals reach the Safety Panel. Topographic complications require Seabeam, Seamarc and/or Gloria mapping. Jean Charcot and

possibly Discovery may be able to obtain Seabeam and Gloria records.

Because of the paucity of data in the vicinity of the Chile Triple Junction sites the Panel strongly recommends that a major international site survey effort be concentrated in this region during the Austral summers of 1984-85 and 1985-86.

XIV WEDDELL SEA AND ENVIRONS

This region will be considered by the Southern Oceans' Working Group early in 1984. Proposals for drilling in the following areas have already been received: Maud Rise, Explorer Ridge, Weddell Sea Basin, Powell Basin, Astrid Rise, South Sandwich Trench, Bransfield Strait. The amount of seismic data, especially multichannel, in these areas is sparse except in the Bransfield Strait, where no further site surveys are required. Members of the Site Survey Panel have begun to compile available data but the work is incomplete. Data are available from or will be collected by Australia (BMR), France (IFP), UK (P Barker), FRG, Norway, US (USGS), and Japan. The Panel is to receive information on site priorities from the WG in February 1984 in order to examine in detail site surveys required for the Austral summers of 1984/85 and 1985/86. FRG, France, Norway and the UK will all be working in the region during the next Austral summer.

XV SITE SURVEYS: INDIAN OCEAN

Members of the Panel expressed concern that oceanographic groups from several countries will be working in the Indian Ocean during 1984 and 1985 and yet are unaware of drilling priorities for this region. The ships could be used to carry out site specific surveys during more regionally-based programmes. FRG, the UK, India, France and Australia are all planning cruises. US vessels are also likely to work in the region although final decisions on funding have not yet been made.

The Panel strongly recommends that PCOM produces at the earliest opportunity a plan for Indian Ocean drilling so that a program of

XVI SITE SURVEYS FOR RISER DRILLING

Although drilling with a riser is not of immediate concern the Panel was in agreement that our instrumental and managerial methods for acquiring site survey data are insufficient to meet the requirements for riser drilling in deep water. Near bottom geophysical surveys, especially high resolution seismic and sidescan, are required as well as sampling surveys to provide engineers with foundation conditions. More rigid criteria for site surveys will be needed. It may be necessary to build up a small core group, similar to that for downhole logging, in order to support riser site surveys. This proposal will be considered further at the next SSP meeting.

XVII IPOD DATA BANK

C Brenner presented a statement on recent acquisitions to the Data Bank. These are:

- (i) Final Report on the JOI-funded Western Pacific site surveys carried out by Kana Keoki (cruise 81, leg 6; chief scientist T Shipley)
- (ii) CNECXO cruise catalogs 1977, 1978, 1980-82
- (iii) M V FARNELLA cruise 1981. Navigation and seismic profile in vicinity of Site 3A, Leg 94
- (iv) Preliminary report of HAKUHO MARU cruise 82-84. Ocean Record Institute, University of Tokyo (covers area around Bonin Islands, Amami Plateau and SW Sea of Japan).
- (v) Report of JOI-funded Mississippi Fan Survey for Leg 96.
(A Shor, Principal Investigator)

Other data holdings are given in Appendix I (a published OTC Report). C Brenner indicated that the Central North Atlantic Site Survey volume is ready for publication. A publisher is being sought at the present time.

AVIII REVIEW OF MANDATES FOR JOIDES SITE SURVEY PANEL

The following mandates were drawn up for consideration by PCOM:

1. The SSP reports to and advises PCOM on all site surveys related to drilling
2. The SSP promotes international co-operation and co-ordination of site surveys
3. The SSP must ensure that there is proper co-ordination with the JOI SSP
4. The SSP makes recommendations to JOIDES Working Groups on site survey specifications
5. The SSP identifies data gaps in future drilling areas and recommends appropriate action to ensure that sufficient survey information is available for pinpointing specific drilling targets
6. The SSP must encourage the fullest use of new technologies for surveying potential drill-sites
7. The SSP ensures that all data used for planning and execution of drilling targets are lodged in a proper format in the IPOD Data Bank

IX ANY OTHER BUSINESS

The Chairman on behalf of the Panel expressed his thanks to Dr Dick Von Herzen and his colleagues at Woods Hole for their kind hospitality during the period of the meeting.

The date of the next SSP meeting will be arranged soon after the PCOM session at TAMU in January 1984.

E J W Jones
December 1983

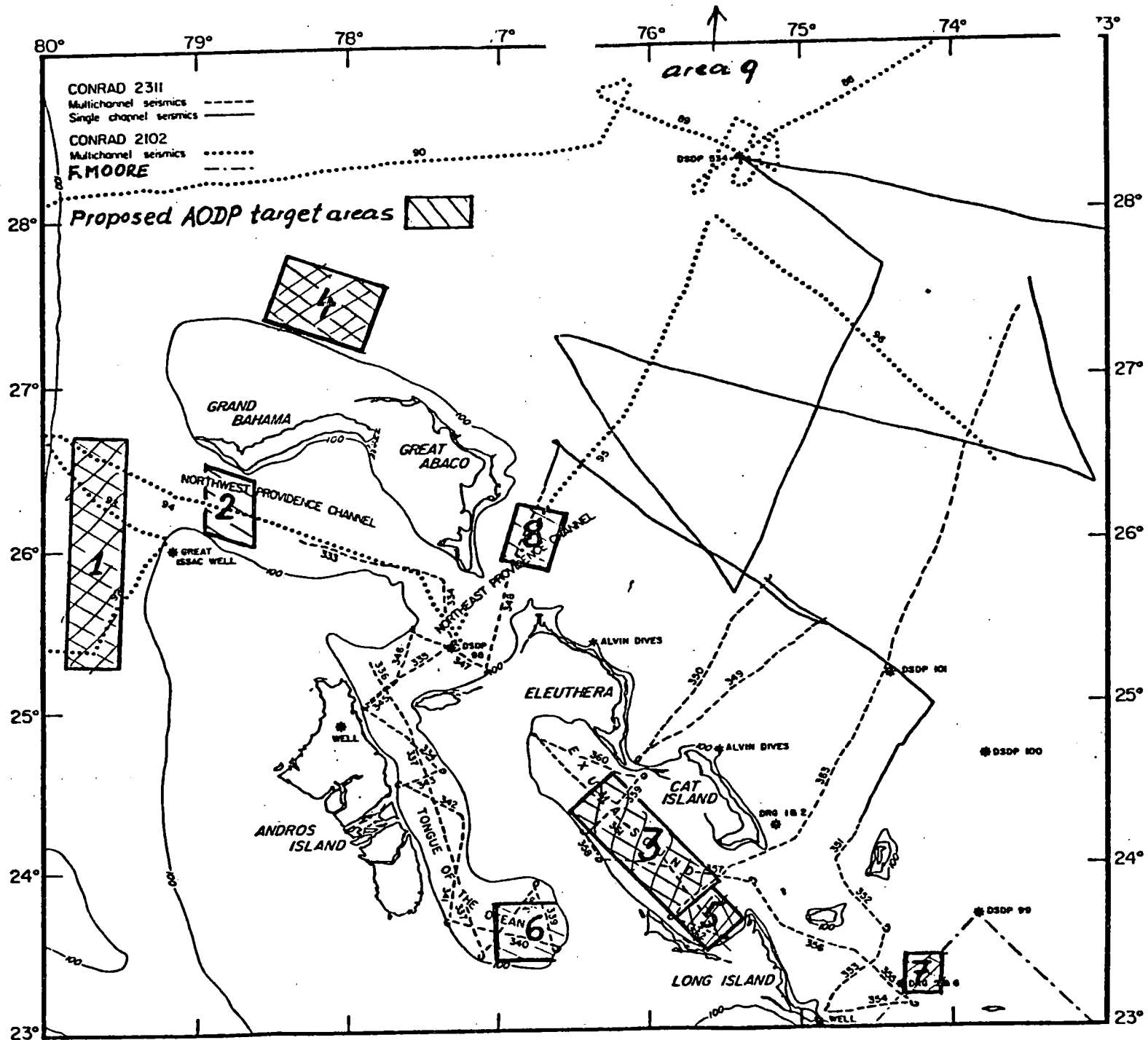
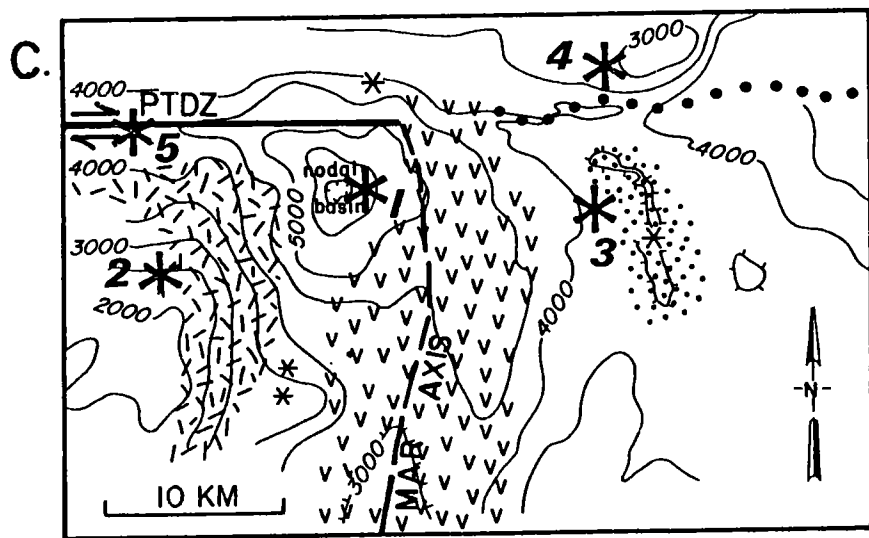
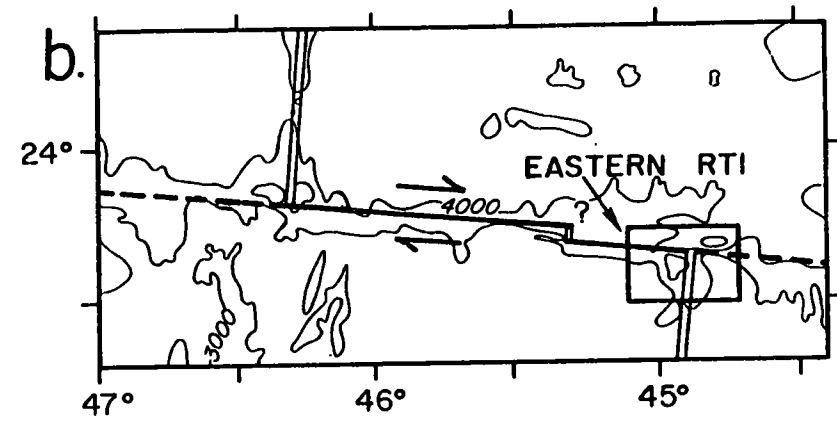
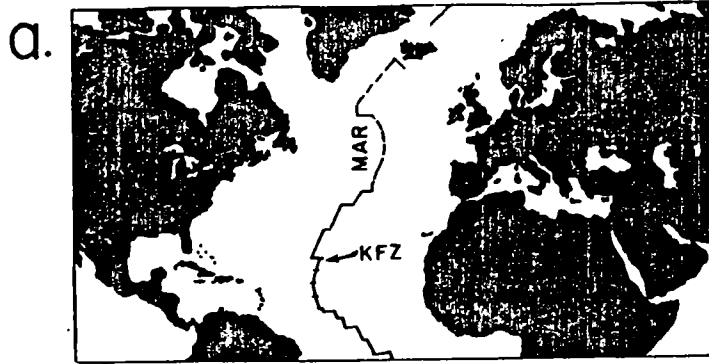


Fig. 1. Proposed target areas, available multichannel seismic lines and deep wells in Bahama - Blake area.











-  Neovolcanic zone
 -  Relict volcanic ridges
 -  Exposures of plutonic rocks
 -  Older basaltic terrain and/or sediment covered
 -  Principal transform displacement zone
 -  General orientation of major fault scarps
 -  Approximate limit of volcanics in nontransform zone
 -  * Hydrothermal deposits
- * 1-5 OCP recommended sites**

Figure 2

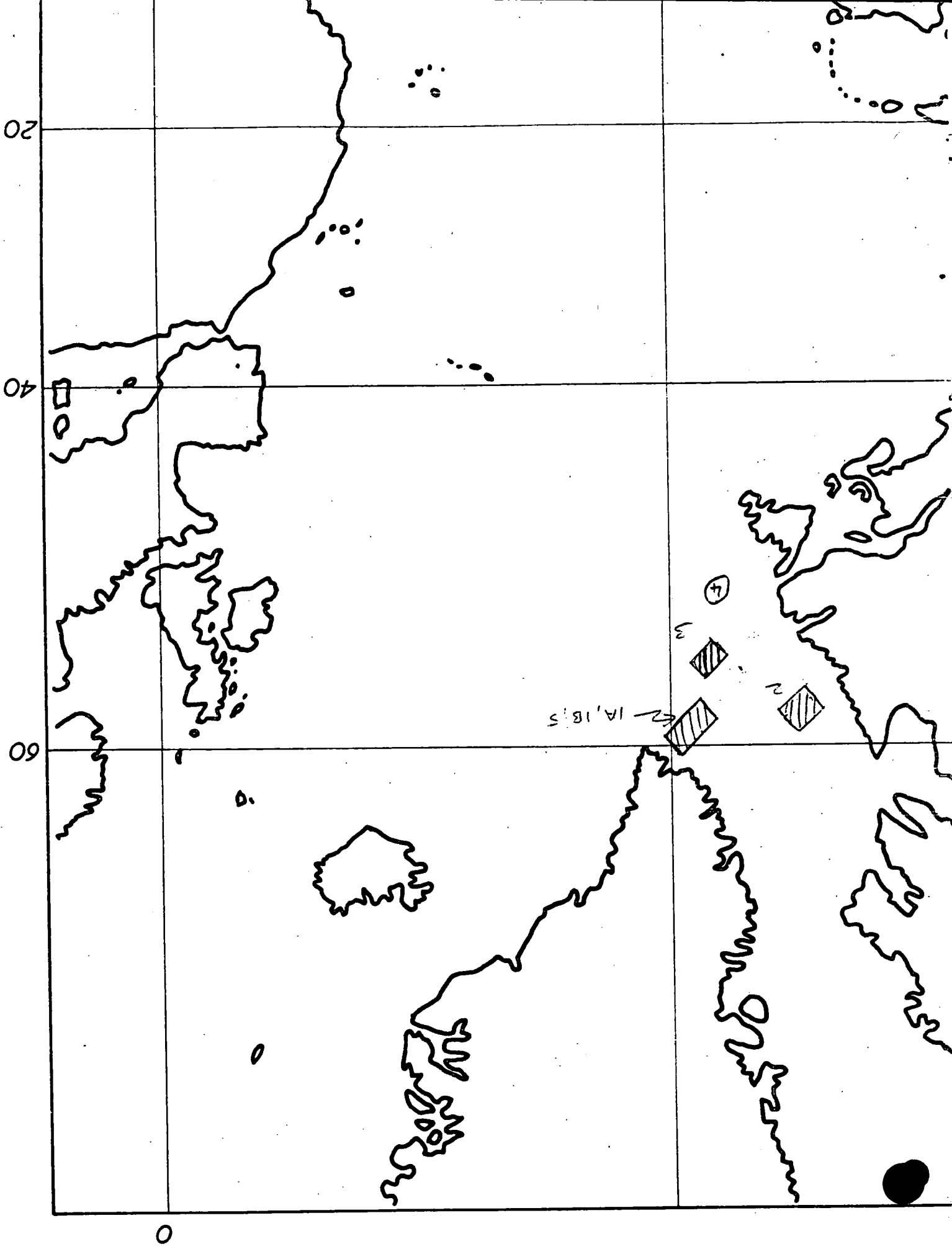


Figure 4

⊗ Hole location

