OCEAN DRILLING PROGRAM

LEG 120 SCIENTIFIC PROSPECTUS

CENTRAL KERGUELEN PLATEAU

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INTRODUCTION

Legs 119 and 120 of the Ocean Drilling Program will complete a latitudinal transect in the Southern Ocean between Kerguelen Island (49°S) and Prydz Bay, Antarctica (67°S). This transect will study the Late Cretaceous to Holocene climatic history of East Antarctica, the origin and tectonic history of the Kerguelen Plateau, and the Late Mesozoic rifting history of East Antarctica and India. ODP Leg 119 will drill sites on the northern and southern Kerguelen Plateau and on the Prydz Bay continental margin, while ODP Leg 120 will drill several sites on the central portion of the Kerguelen Plateau (Tables 1 and 2; Figure 1).

This prospectus is concerned solely with the Leg 120 scientific objectives, and was in part compiled using the drilling proposals submitted to the JOIDES panels by Schlich et al. (1985; 1987).

KERGUELEN PLATEAU

Drilling on the Kerguelen Plateau is aimed at both tectonic and paleoceanographic objectives. The 2500-km-long plateau rises from 2 to 4 km above the surrounding seafloor and offers the opportunity to make a latitudinal transect between 49°S and 62°S in an area of the Southern Ocean where sediment thicknesses and carbonate preservation are enhanced. This area lies south of the present-day Antarctic Convergence and beneath the main flow of the Antarctic Circumpolar Current. Drilling on the Kerguelen Plateau should therefore document the development and evolution of these two paleoceanographic features, which have a major effect on global climate and surface-water circulation (Figure 2).

The Kerguelen Plateau is bounded to the northeast by the Australian-Antarctic Basin, to the southwest by the African-Antarctic Basin (Enderby and Valdivia Basins), and to the northwest by the Crozet Basin. To the south, it is separated from Antarctica by the 3500-m-deep Princess Elizabeth Trough. The Kerguelen Plateau has been divided into two distinct domains (Schlich, 1975; Houtz et al., 1977). The northern portion of the plateau, the Kerguelen-Heard Plateau, generally lies in water depths of less than 1000 m, and includes the feature's only subaerial manifestations, Kerguelen, Heard, and McDonald islands. The southern portion of the feature, the Southern Kerguelen Plateau, is deeper, generally lying between 1500 and 2000 m. The transition zone, between 54°S and 58°S, exhibits a complex bathymetry with a large east-west-trending spur, the Elan Bank, extending westward from the main plateau over a distance of 600 km (Figures 1, 3).

The age of the oceanic crust abutting the plateau varies and has been analyzed since 1966 by various authors. The Kerguelen Plateau and Broken Ridge form a symmetric pair of "aseismic ridges" separated by the Southeast Indian Ridge. Fracture zones and magnetic lineations related to this spreading center have been mapped and analyzed by Schlich and Patriat (1967, 1971), Le Pichon and Heirtzler (1968), McKenzie and Sclater (1971), and Houtz et al. (1977). The seafloor close to the Kerguelen Plateau has been dated by the observed magnetic lineations (Figure 3). Le Pichon and Heirtzler (1968) identified anomalies 13, 16 and 17 (40 Ma) east of Heard

Island. Schlich and Patriat (1971) recognized anomalies 1 to 11 (32 Ma) to the east and the north of Kerguelen Island. Farther to the south, eastward from Heard Island, Houtz et al. (1977) also identified anomalies 1 to 18 (42 Ma). Thus the isochrons close to the northeastern margin of the ridge vary in age from 32 Ma (to the north) to 42 Ma (to the south). Northwest and west of the Kerguelen Plateau, magnetic anomalies 23, 24 and 28 (65 Ma) and magnetic anomalies 33 and 34 (84 Ma) have been identified (Schlich, 1975, 1982). No seafloor-spreading magnetic anomalies have been observed adjacent to the southwestern flank of the Kerguelen Plateau (Figure 3).

According to Le Pichon and Heirtzler (1968), the Kerguelen Plateau and Broken Ridge were separated in Eocene time. The reconstructions proposed by Houtz et al. (1977) and Goslin (1981) to total closure of Australia and Antarctica at anomaly 20 show an unacceptable overlap of Broken Ridge and the Kerguelen Plateau. Mutter and Cande (1983) and Mutter et al. (1985), employing a revised chronology for the breakup of Australia and Antarctica (Cande and Mutter, 1982), partially resolved the overlap problem. However, the resulting reconstruction does not exclude overlap of the northern portion of the Kerguelen Plateau with Broken Ridge.

The origin and crustal structure of the Kerguelen Plateau remain obscure despite geophysical and geological investigations. Three possibilities, each geochemically distinguishable, may explain the feature's origin and crustal nature: 1) it is a continental fragment; 2) it is a product of excessive on- or off-axis oceanic volcanism, possibly hotspot-related; 3) it is a thermally or tectonically uplifted and possibly thickened block of oceanic crust. None of these possibilities may be eliminated at present, and it is possible, given the apparent structural complexities of the Kerguelen Plateau, that different parts of the feature have different origins (Coffin et al., 1986). Petrological (Giret, 1983) and geochemical studies (Dosso et al., 1979; Mahoney et al., 1983) of Kerguelen Island igneous rocks show clear affinities with the observations derived from other oceanic islands. The crustal structure of the Southern Kerguelen Plateau was modeled by Houtz et al. (1977) using gravimetric and seismic reflection/refraction data, and of the Kerguelen-Heard Plateau by Recq et al. (1983) and Recq and Charvis (1986) using two seismic refraction profiles shot on Kerguelen Island. The maximum thickness of the crust was determined to be between 15 and 23 km. Furthermore, the seismic velocity versus depth distribution is similar to that of typical oceanic islands (Crozet) or plateaus (Madagascar).

The Kerguelen Plateau has been surveyed by American, Soviet, French, and Australian vessels. The most important contributions are from the cruises of R/V Conrad (1964, 1967 and 1974), M/S Gallieni (1970 and 1972), USNS Eltanin (1971 and 1972), R/V Marion Dufresne (1973, 1975, 1981, 1983, and 1986), M/S Cape Pillar (1980), M/S Nella Dan (1980, 1981, and 1982), and R/V Rig Seismic (1985). The first cruises, prior to 1981, collected bathymetry, magnetics, gravimetry, single-channel seismic reflection, sonobuoy wide-angle reflection and refraction data, and some piston cores. Schlich et al. (1971), Schlich (1975) and Houtz et al. (1977) derived the bathymetry and sediment distribution on the Kerguelen Plateau from these reconnaissance studies.

The 1981 R/V Marion Dufresne cruise (MD 26) provided high-quality multichannel seismic reflection data over an area of about 80,000 km^2 on the northern part of the Kerguelen Plateau, southeast of Kerguelen Island. Five northeast-southwest profiles and five orthogonal northwest-southeast profiles were shot; the profile spacing was about 50 km. A total of 2640 km of 24-channel seismic reflection profiles were obtained using a Flexichoc source with a 50-m shot interval. Two sonobuoy experiments were performed during this cruise, and 42 piston cores and dredges were obtained during the 1983 Marion Dufresne cruise over the same area.

The 1985 R/V Rig Seismic cruise (RS 02) acquired high-quality multichannel seismic reflection data over the Kerguelen Plateau between 50°S and 60°S. Most of the lines were shot in a WSW-ENE direction; the spacing of the seven east-west profiles on the Southern Kerguelen Plateau was approximately 50 km. Some 5600 km of 48-channel seismic reflection profiles were obtained with two 500-in^3 air guns fired at a 50-m interval.

The 1986 R/V Marion Dufresne cruise (MD 47) surveyed the entire Southern Kerguelen Plateau between 55°S and 63°S and provided 4450 km of 24-channel seismic reflection profiles, using a Flexichoc source with a 50-m shot interval. The profiles were oriented in the central part of the Southern Kerguelen Plateau to be orthogonal to the principal R/V Rig Seismic lines. Four sonobuoy experiments were performed during this cruise over representative sedimentary sequences, and 16 piston cores and 8 dredges were obtained during the second 1986 R/V Marion Dufresne cruise (MD 48). The stations were located between 50°S and 58°S primarily on the eastern flank of the Kerguelen Plateau.

Figures 4a and 4b show the track lines on the Kerguelen Plateau. The bold lines correspond to track lines made during Gallieni (GA), Rig Seismic (RS) and Marion Dufresne (MD) cruises.

Kerguelen-Heard Plateau

The main sedimentary basin on the Kerguelen-Heard Plateau southeast of Kerguelen Island was delineated from the seismic reflection data obtained in 1970 and 1972 by M/S Gallieni. Detailed geophysical and geological analysis of this basin was computed using the data acquired in 1981 (MD 26) and 1983 (MD 35). Figure 5 shows the two major seismic sequences (S and I) identified by Munschy and Schlich (1987) which are separated by a major discordance (A). Discordance A is a major event in the sedimentary section and marks a hiatus from the middle Eocene to the early Miocene. This event also separates pre-rift from break-up and post break-up sequences. The evolution of the Kerguelen Plateau, postulated from basin stratigraphy, can be summarized as follows (Munschy and Schlich, 1987) (Figure 6):

- In early Late Cretaceous time (about 100 Ma) the Kerguelen Plateau was faulted and elevated to shallow depths. Normal faulting occurred along the present limit of the sedimentary basin and along the present eastern margin of the plateau. This tectonic event corresponds to the first pre-rift faulting episode between the Kerguelen Plateau and Broken Ridge.

- From Late Cretaceous to Eocene time the Kerguelen Plateau remained a shallow marine structure, continuously subsiding at a rate of about 20 m/m.y., and was covered essentially by shelf pelagic sediments (seismic units I2 and I1) without obvious sedimentary hiatuses. Seismic unit I3 represents the first deposition along the present Kerguelen platform.

- During the Eocene the eastern part of the Kerguelen Plateau was uplifted, probably close to sea level, and seismic unit I1 was partially eroded.

- By magnetic anomaly 18 time the plateau and Broken Ridge were clearly separated by spreading at the Southeast Indian Ridge. The break-up occurred at 45-42 Ma, and newly rifted margins subsequently subsided.

- During Miocene and possibly Oligocene time the plateau was covered by calcareous ooze containing siliceous biogenic components. The clastic component of the post-rift deposits is significant, and was derived essentially from Kerguelen Island. The first clastic deposits are probably Oligocene in age.

- Sedimentation continued throughout the late Miocene, Pliocene, and Quaternary. Sediments consist of diatomaceous ooze, glauconized sand with ice-rafted debris and ash layers corresponding to explosive volcanic activity.

Southern Kerguelen Plateau

The Southern Kerguelen Plateau has been the focus of three major research cruises in 1985 (RS 02) and 1986 (MD 47, MD 48), and interpretation of the geophysical and geological data is under way. Analysis of the SEASAT-derived free-air gravity field and seismic reflection data has led to an improved understanding of the Kerguelen Plateau (Coffin et al., 1986). South of 53°S the Kerguelen Plateau consists of two distinct sectors. The Southern sector, which corresponds to the Southern Kerguelen Plateau, consists of a broad anticlinal arch affected by multiple stages of normal faulting resulting in horst and graben development. The eastern sector abuts the main southern plateau and consists of a large abyssal basin (Labuan) and a prominent ridge (William's), both faulted (Figures 7 and 8).

Coffin et al. (1986) concluded that the Southern Kerguelen Plateau may be an amalgamation of disparate structural elements, including broad crustal uplifts, trapped oceanic crust, possible continental fragments, and possible fracture-zone ridges and troughs. Recent dredging (MD 48) along a major graben (77° Graben of Houtz et al., 1977) recovered the first significant assemblage of basement rocks from the Southern Kerguelen Plateau. The horst samples are basaltic, suggesting an oceanic or oceanic island origin from the Southern Kerguelen Plateau. Shallow-water limestones of probable Cretaceous and Paleogene ages were also recovered by dredging the basin, and Eocene and Cretaceous sediments were sampled on the faulted eastern flank of the Southern Kerguelen Plateau (Leclaire et al., 1987). The recent sampling supports the previous interpretation of Houtz et al. (1977) that the Neogene section on the Southern Kerguelen Plateau, although thick locally in the Raggatt Basin, is generally thin, and furthermore is usually separated from older sediments by a major unconformity (Colwell et al., 1987).

The sedimentary sequence over the Raggatt Basin is more than 3 km thick and can be divided into two megasequences. The lower megasequence appears very thick in the central part of the basin and thins toward the southeast by erosion of its top. The upper megasequence is about 1.5 km thick. A discordance (D) at the lower part of the megasequence marks an episode of tectonic extension characterized by normal faulting (Figures 7 and 9). The tectonic episode probably corresponds to the break-up between the Kerguelen Plateau and Broken Ridge (Schlich et al., 1987).

MAJOR OBJECTIVES

The nature, evolution, and paleoenvironmental history of the Kerguelen Plateau can be determined by deep-sea drilling on the plateau. The major objectives include:

- the nature and age of the different sedimentary sequences;

- the tectonic history of the Kerguelen Plateau, including the ages of unconformities, rifting, and vertical movement;

- the paleoceanographic history of the region, including (1) the latitudinal and vertical variations of water masses, fauna, and flora through time, (2) the shift of the polar front, and (3) the initiation and development of circumpolar and Antarctic Bottom Water (AABW) circulation;

- the nature and age of basement at sites on previously identified structural elements.

OBJECTIVES OF PROPOSED SITES

Site **SKP-1** (54°48.8'S, 76°47.4'E, water depth 1700 m) is a basement site designed to provide recovery of basalts from this region of the plateau (Figure 10).

Site **SKP-2** (57°48.9'S, 79°55.8'E, water depth 1660 m) is intended to recover a high resolution Neogene and Paleogene stratigraphic section from the Central/Southern Kerguelen Plateau. This site is a key component of the latitudinal paleoceanography transect (Figure 10).

Site **SKP-3** (58°07.6'S, 78°11.4'E, water depth 1500 m) is a reentry site planned to recover an expanded section of Paleogene and Cretaceous sediments reflecting the early history of the Central/Southern Kerguelen Plateau (Figure 10).

Site **SKP-4A** ($58^{o}43.0'S$, $76^{o}24.4'E$, water depth 1160 m) is a basement site proposed to recover 200 m of basement from the Central/Southern Kerguelen Plateau (Figure 10).

Site **KHP-3** ($50^{o}14.2'S$, $73^{o}02.5'E$, water depth 570 m) is a reentry site (alternate) planned to recover an expanded section of Paleogene and Cretaceous sediments reflecting the early history of the Kerguelen-Heard Plateau (Figure 11).

Site **KHP-1** ($49^{o}23.6'S$, $71^{o}39.5'E$, water depth 660 m) is planned to recover a predominantly Neogene and Paleogene section to document the tectonic and subsidence history of the Kerguelen Plateau. Deeper drilling at this site would reveal the pre-rift history and allow for comparisons with results from Broken Ridge.

DRILLING PLAN

The drilling plan for Leg 120 will depend somewhat on the operational and drilling experience gained during Leg 119. The Leg 120 plan, therefore, will undoubtedly be modified and tailored once the lithologic nature and drilling characteristics of the rock sequences are better known for this yet-undrilled region. Particularly important for estimating the depths to which single bit versus reentry holes can be drilled will be the amount of chert encountered within the carbonate units and the less predictable weather factor. For this reason, two site occupation schedules are given in Table 2.

Both plans ensure the basement objectives at Sites SKP-1 and SKP-4A, plus the Neogene and upper Paleogene objectives at Site SKP-2. Progress achieved during the occupation of Site SKP-2 will help determine whether to continue that hole as a reentry in order to achieve deeper objectives or to obtain the expanded Paleogene section (down to 800 mbsf) at a shallower subbottom depth at Site SKP-3.

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TABLE 1

LEG 120 KERGUELEN DRILLING PROGRAM

SITE	LATITUDE S	LONGITUDE E	WATER DEPTH (m)	DRILLING DEPTH (m)	DRILLING TIME (days)	LOGGING TIME (days)	TOTAL TIME (days)
SKP-1	54°48.8'	76°47.4'	1700	450	4.1	1.5*	5.6
				Option #1 (drill to 1100 mbsf):			
SKP-2	57°48.9'	79°55.8'	1660	1100	9.9	1.7**	11.6
			Option #2 (drill to 1650 mbsf as reentry):				
				1650	19.4	2.0**	21.4
SKP-3	58°07.6'	78°11.4'	1500	800	6.9	1.4	8.3
SKP-4A	58°43.0'	76°24.4'	1160	450	9.2	1.3*	10.5
ALTERNATE SITES							
KHP-3	50°14.2'	73°02.5'	570	1700	14.0	2.1**	16.1
KHP-1	49°23.6'	71°39.5'	660	1400	-***	-***	-***

*Includes time to conduct a borehole televiewer (BHTV) experiment.

**A vertical seismic profile (VSP) would add 1.0 days.

***No estimate given, as interval drilled during Leg 120 would depend on results of Leg 119 drilling.

TABLE 2

SITE OCCUPATION SCHEDULE

Site SKP-2 Option #1

SITE	LOCATION	TRANSIT*	OPERATIONS	DATE
Depart Mauritius				25 Feb.
		9.4 days		
SKP-1	$54^{\circ}48.8'$S $76^{\circ}47.4'$E		5.6 days	
		0.9 days		
SKP-2	$57^{\circ}48.9'$S $79^{\circ}55.8'$E		11.6 days	
		0.5 days		
SKP-4A	$58^{\circ}43.0'$S $76^{\circ}24.4'$E		10.5 days	
		0.3 days		
SKP-3	$58^{\circ}07.6'$S $78^{\circ}11.4'$E		8.3 days	
		9.1 days		
Arrive Fremantle, Australia				26 Apr.
	Contingency Time = 4.8 days	20.2 days	36.0 days	
				TOTAL = 61.0 days

Site SKP-2 Option #2

SITE	LOCATION	TRANSIT*	OPERATIONS	DATE
Depart Mauritius				25 Feb.
		9.4 days		
SKP-1	$54^{\circ}48.8'$S $76^{\circ}47.4'$E		5.6 days	
		0.9 days		
SKP-2	$57^{\circ}48.9'$S $79^{\circ}55.8'$E		21.4 days	
		0.5 days		
SKP-4A	$58^{\circ}43.0'$S $76^{\circ}24.4'$E		10.5 days	
		9.4 days		
Arrive Fremantle, Australia				26 Apr.
	Contingency Time = 3.3 days	20.2 days	37.5 days	
				TOTAL = 61.0 days

*Transit speed 10 kt.

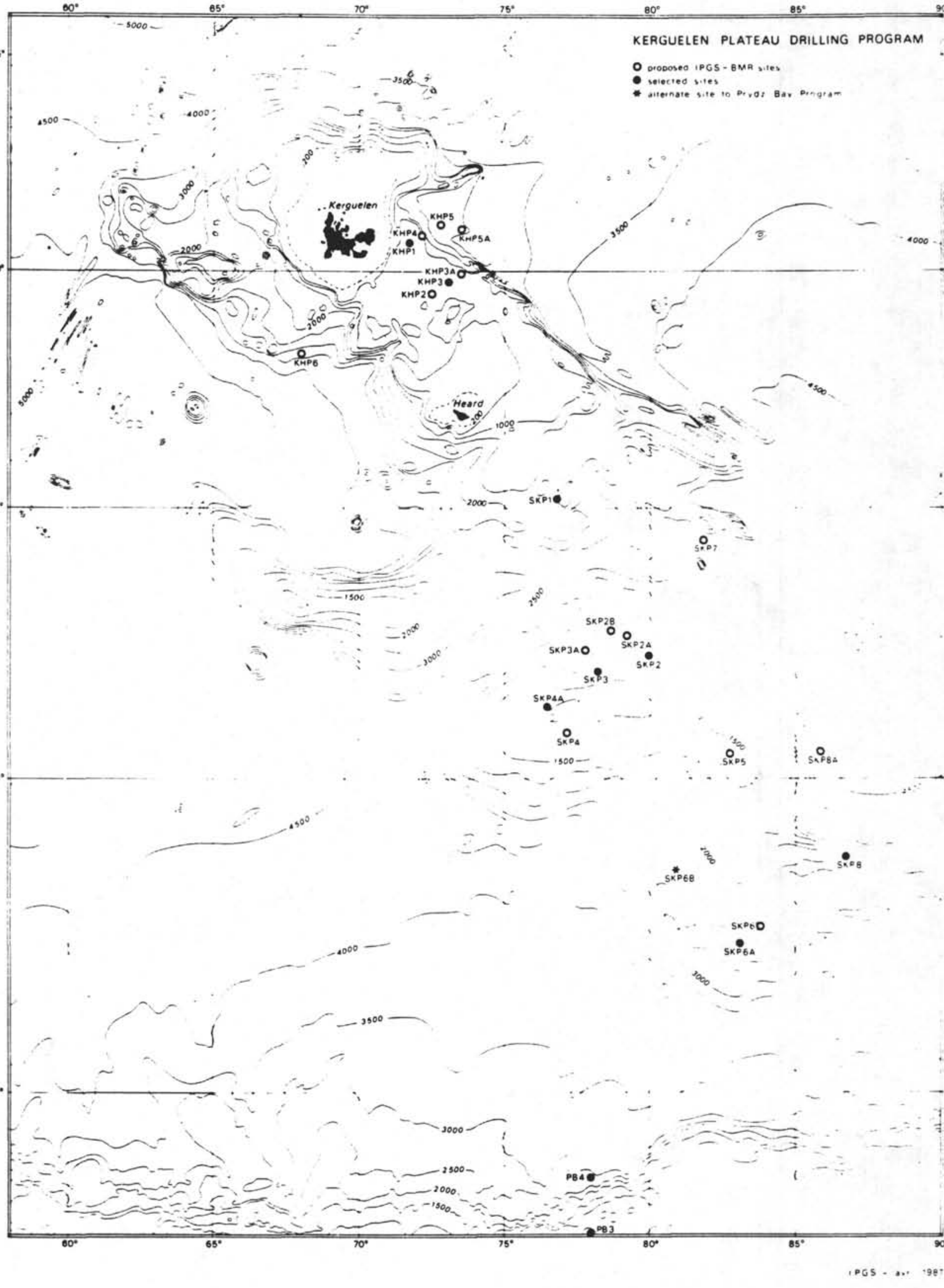


Figure 1. Kerguelen Plateau and Prydz Bay drilling program. Open circles indicate proposed Institut de Physique du Globe (IPGS, France) and Bureau of Mineral Resources (BMR, Australia) sites; closed circles indicate selected sites; asterisks indicate Prydz Bay alternate sites. Bathymetry in meters.

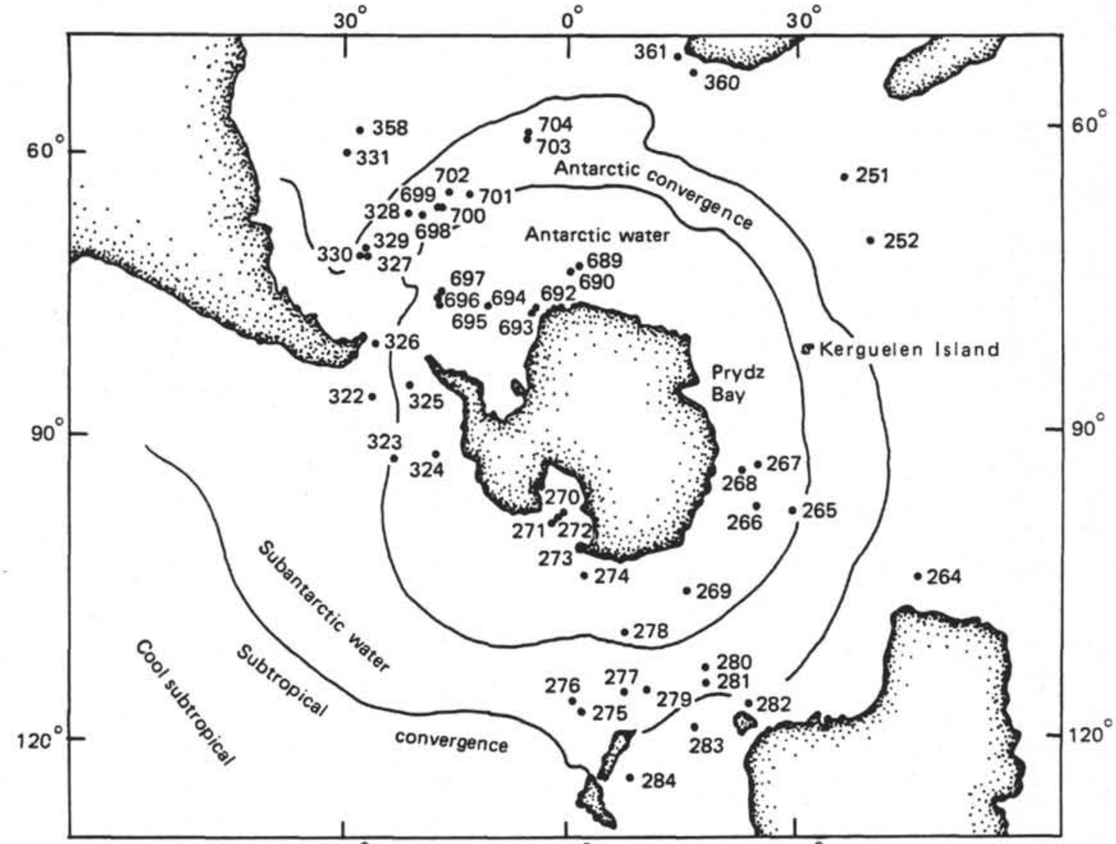


Figure 2. Present-day location of surface-water masses of the Southern Hemisphere (Kennett, 1978). Numbers indicate Deep Sea Drilling Project (DSDP) and Ocean Drilling Program (ODP) sites.

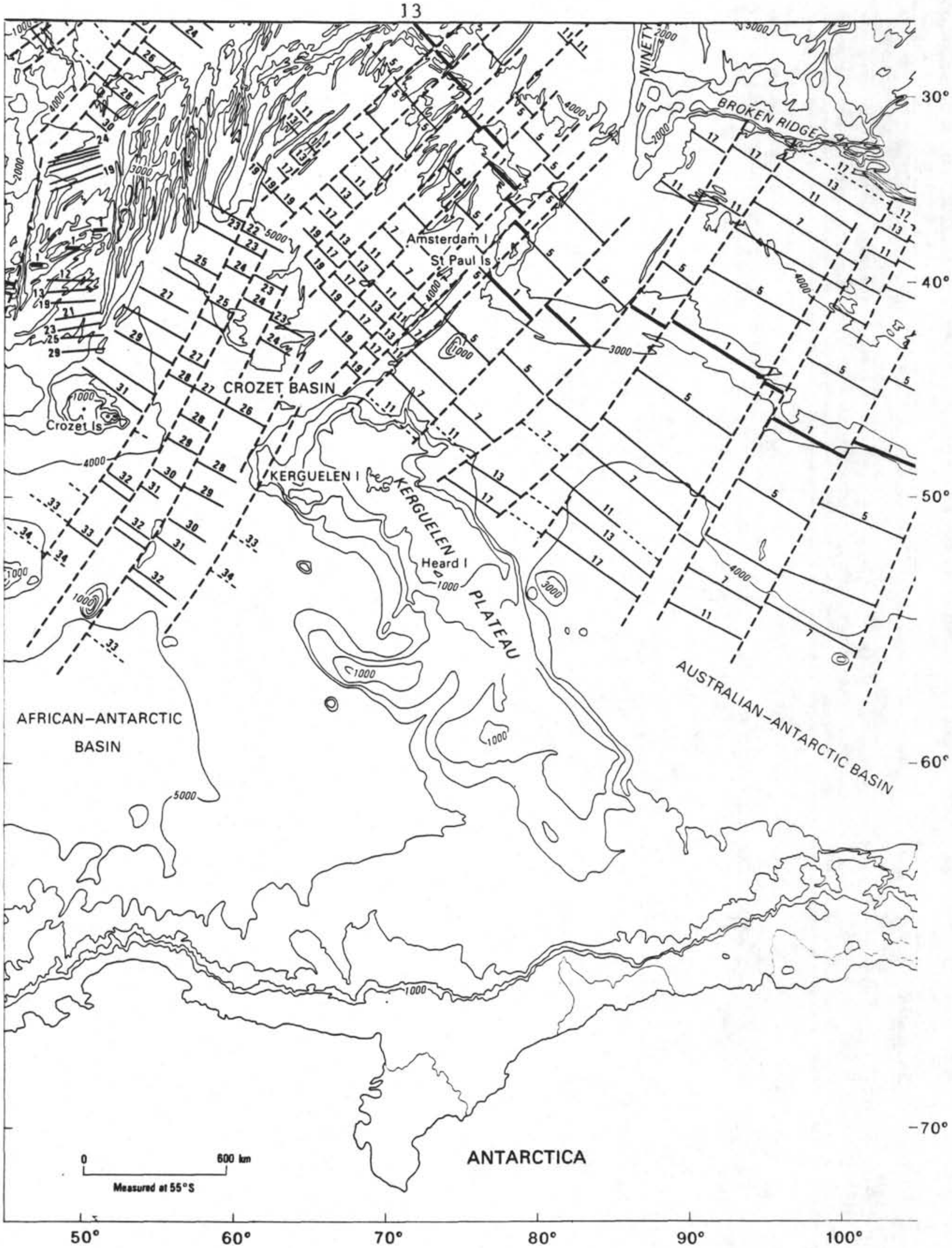


Figure 3. The Kerguelen Plateau in the south central Indian Ocean. Bathymetry (in meters) is from GEBCO (Hayes and Vogel, 1981; Fisher et al., 1982). Fracture zones and magnetic anomalies are from Schlich and Patriat (1967, 1971), Le Pichon and Heirtzler (1968), Schlich (1975, 1982), Houtz et al. (1977), and Tilbury (1981).

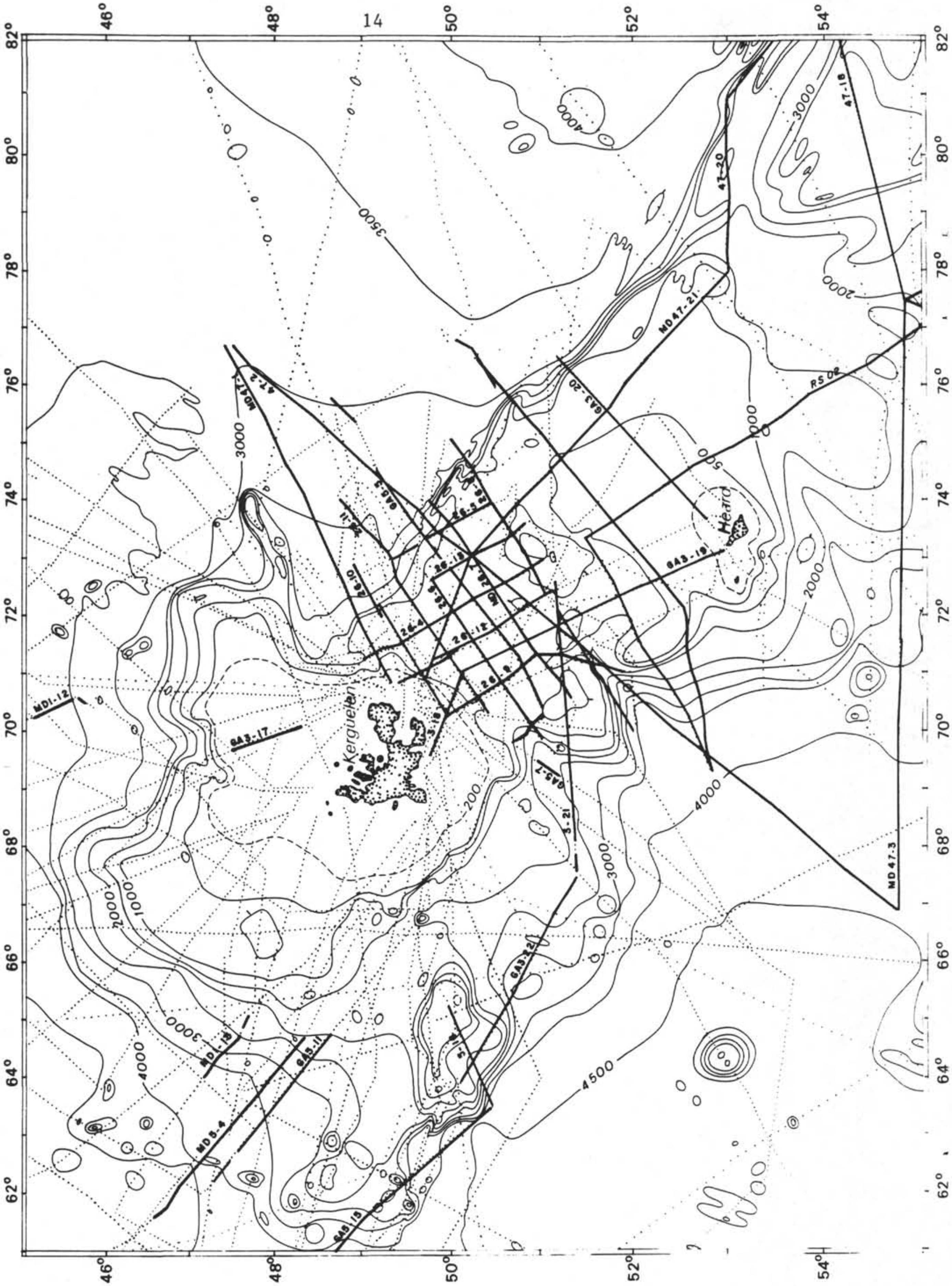


Figure 4a.: Track lines on the Kerguelen-Heard Plateau (KHP). Solid lines denote GA 03 (1970), GA 05 (1972), MD 01 (1973), MD 05 (1975), MD 26 (1981), RS 02 (1985) and MD 47 (1986) multichannel seismic reflection profiles.

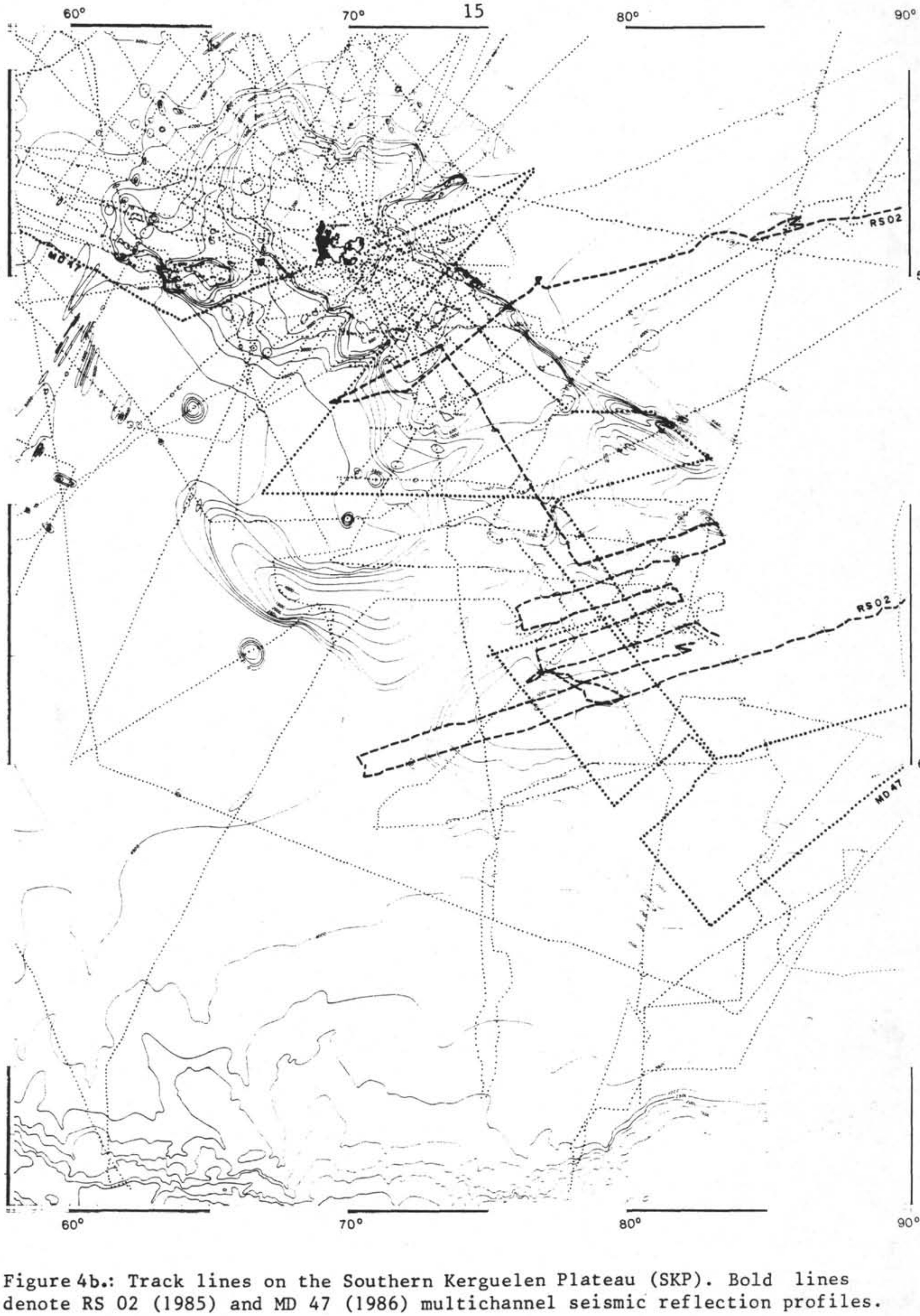


Figure 4b.: Track lines on the Southern Kerguelen Plateau (SKP). Bold lines denote RS 02 (1985) and MD 47 (1986) multichannel seismic reflection profiles.

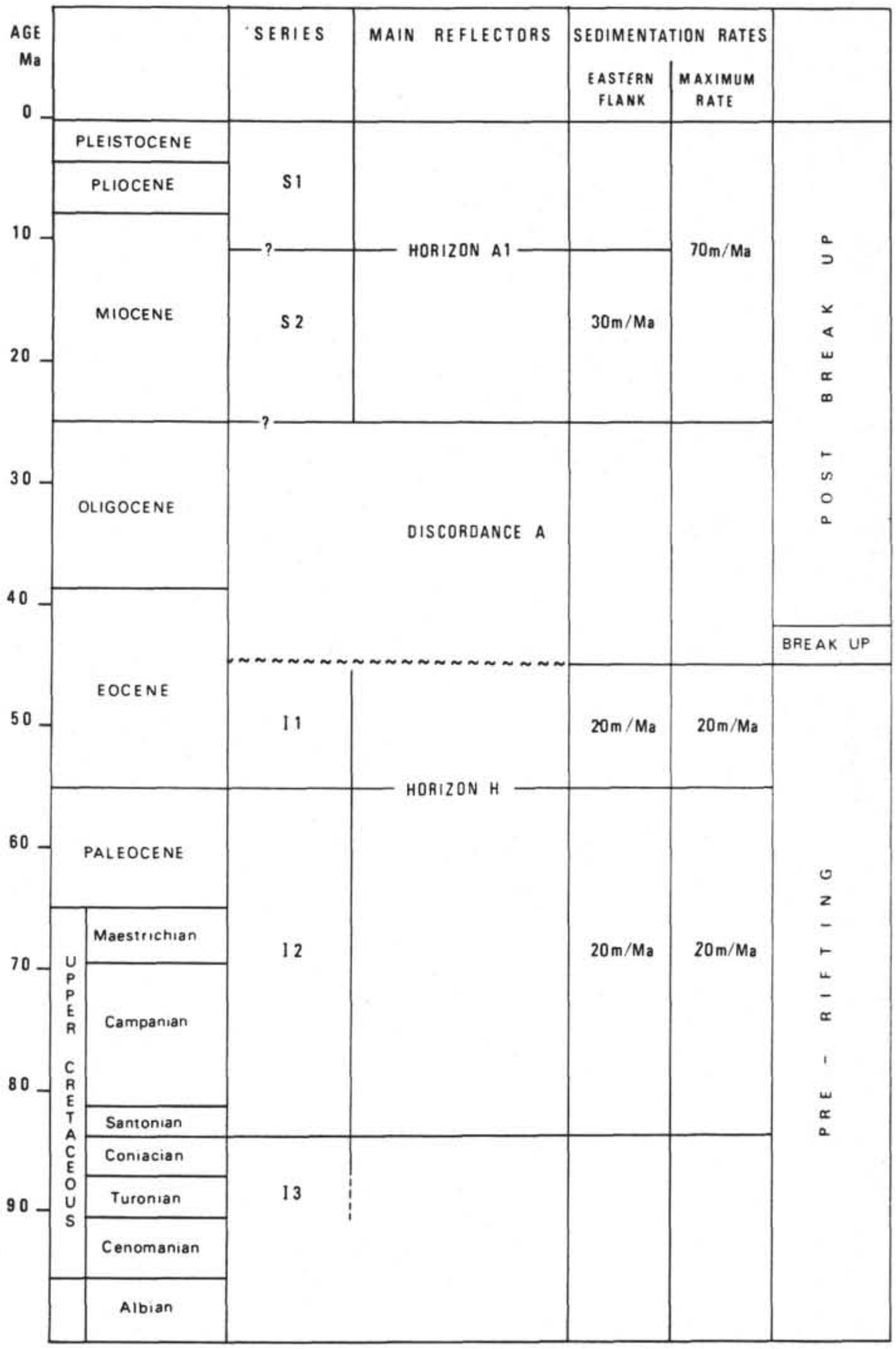


Figure 5. Chronology of seismic sequences and sedimentation rates for the Kerguelen-Heard Plateau (Munschy and Schlich, 1987).

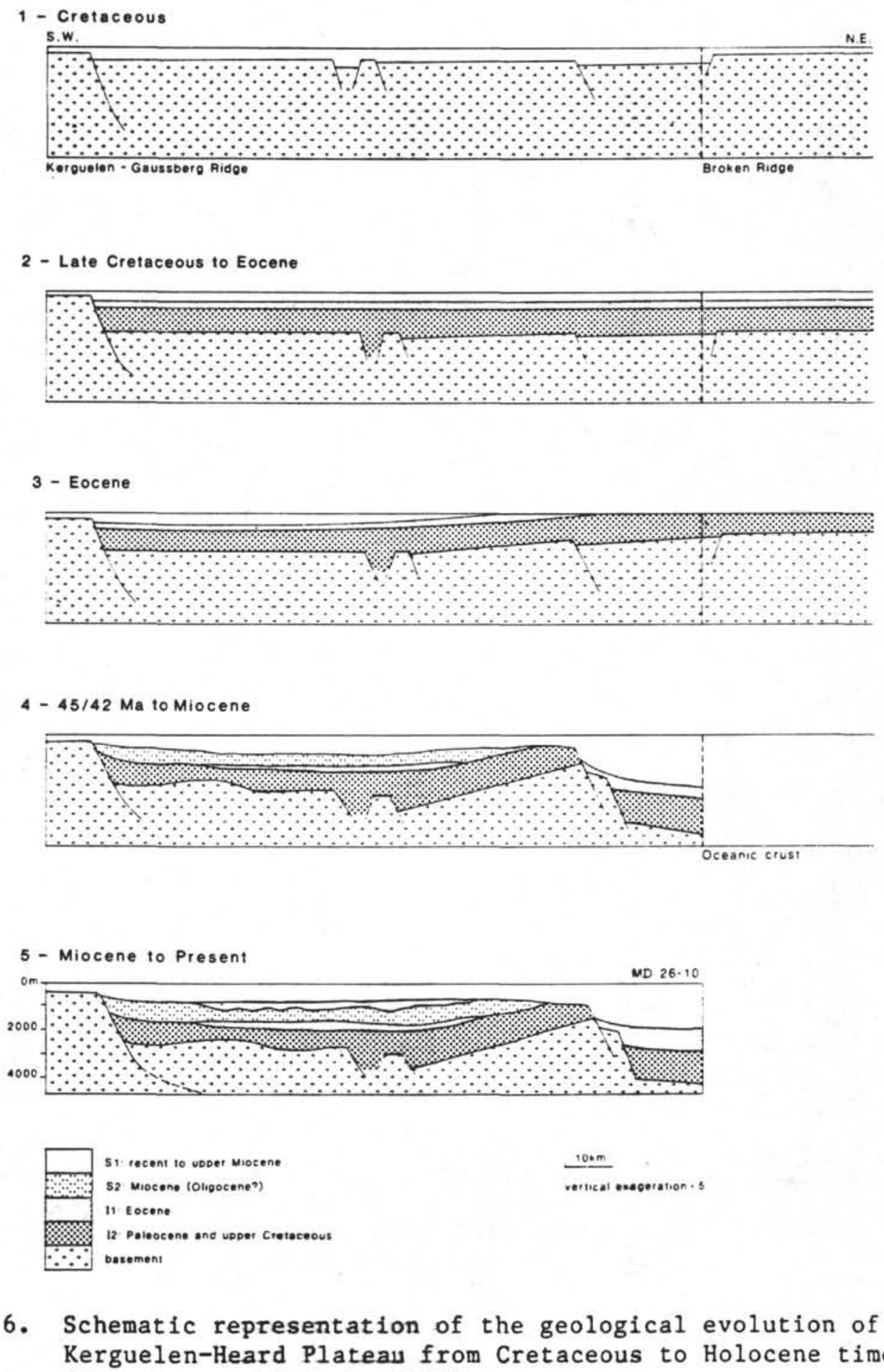


Figure 6. Schematic representation of the geological evolution of the Kerguelen-Heard Plateau from Cretaceous to Holocene time (Munschy and Schlich, 1987).

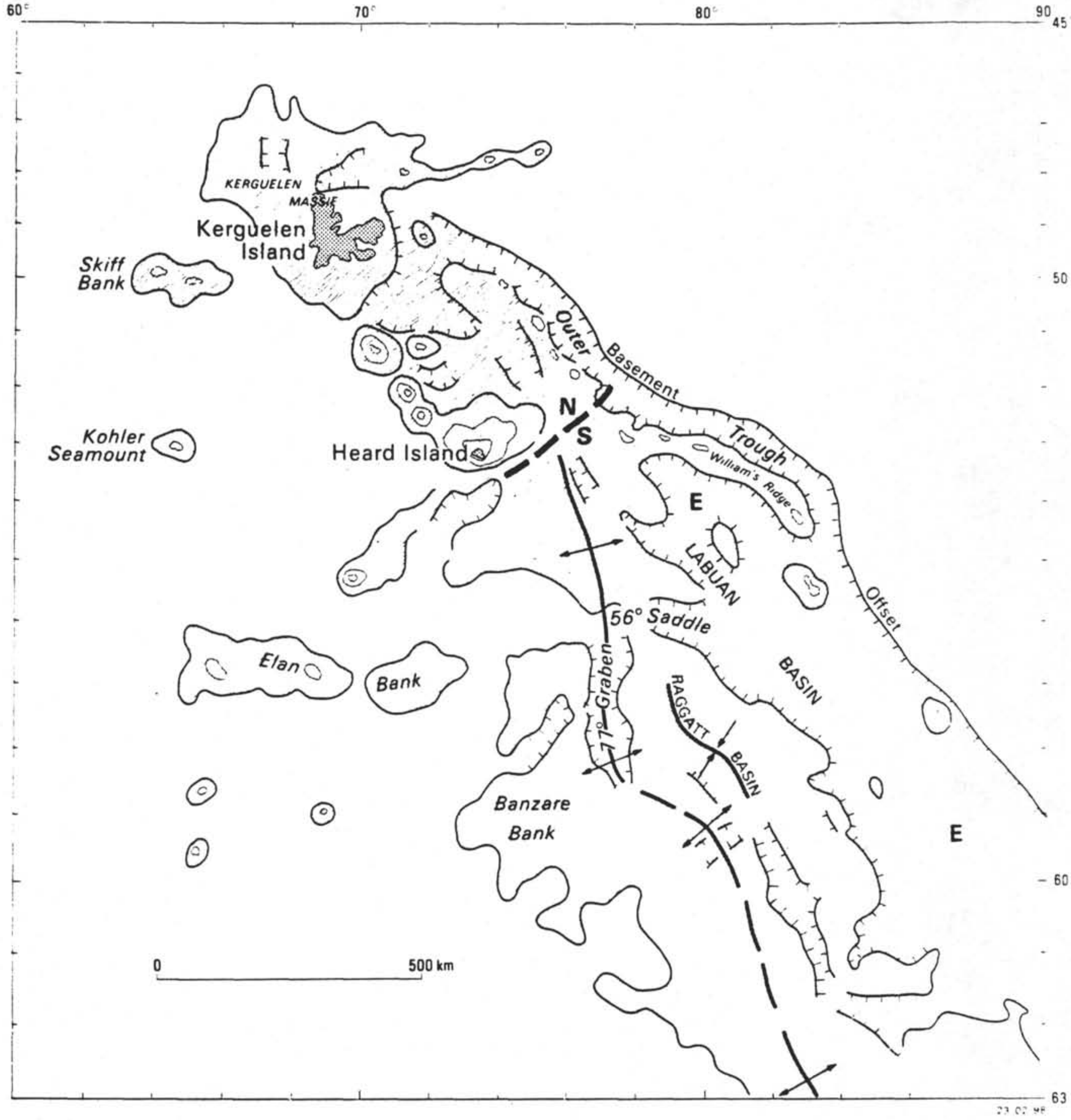


Figure 7. Morphotectonic map of the Kerguelen Plateau (Coffin et al., 1986). Diagonal stippling = elevated areas; horizontal stippling = deep basins; N/S = boundary between northern and southern sectors; E = eastern sector.

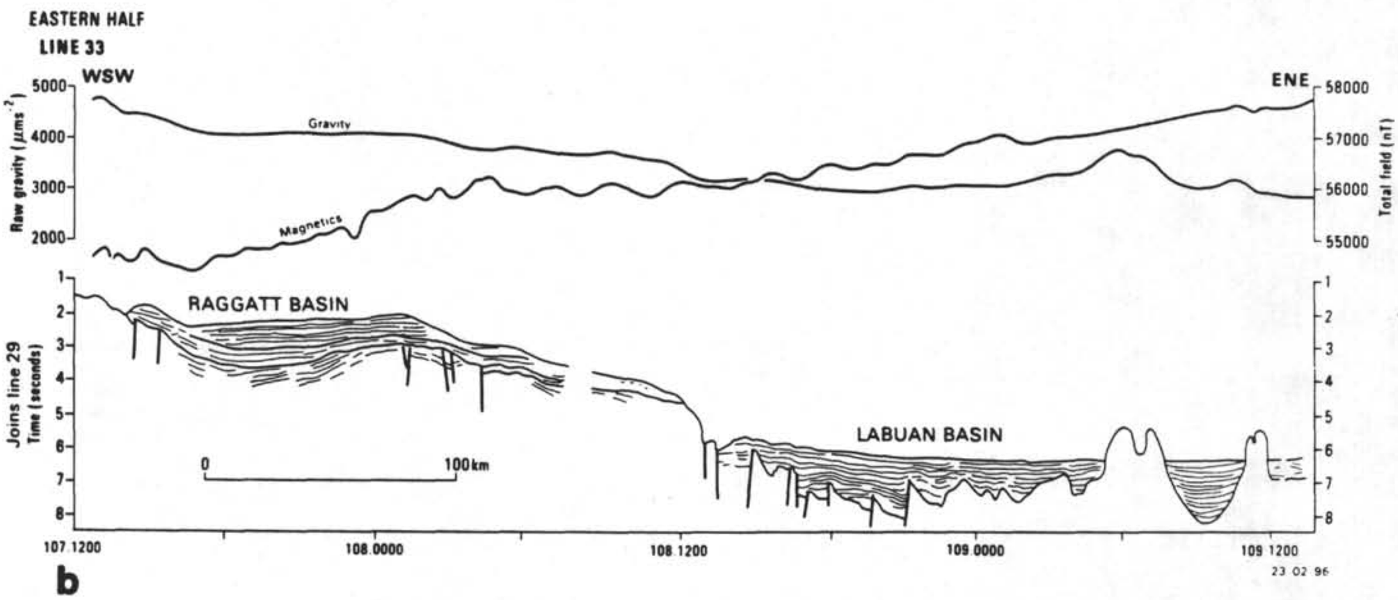


Figure 8. Line drawing across the Raggatt Basin and Labuan Basin: Line RS02-33. Vertical exaggeration is approximately 20:1 (Ramsay et al., 1986).

BASSIN DE RAGGATT

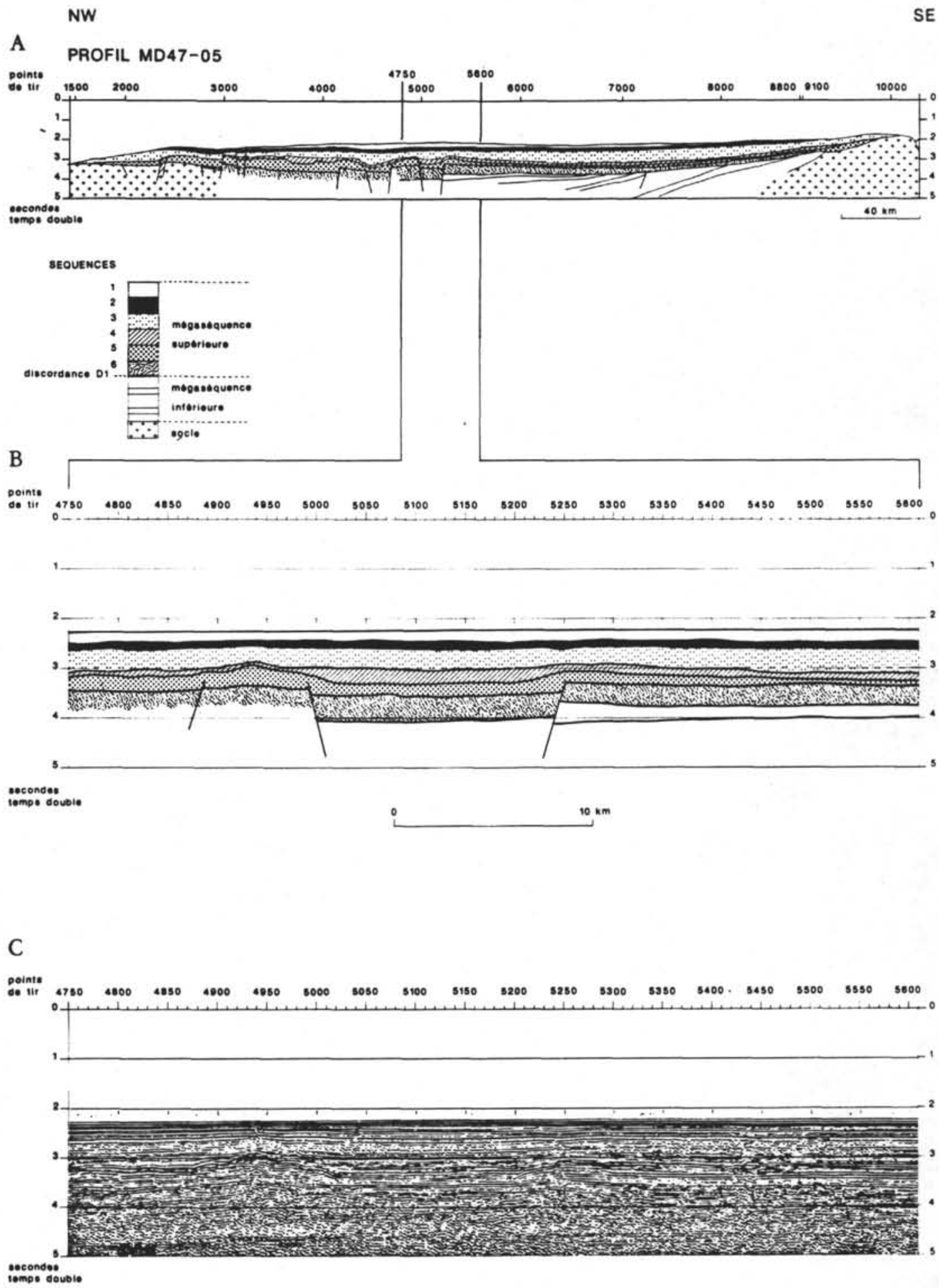


Figure 9a. Section along the Raggatt Basin observed from seismic interpretation: Line MD47-05 (Schlich et al., 1987).

BASSIN DE RAGGATT

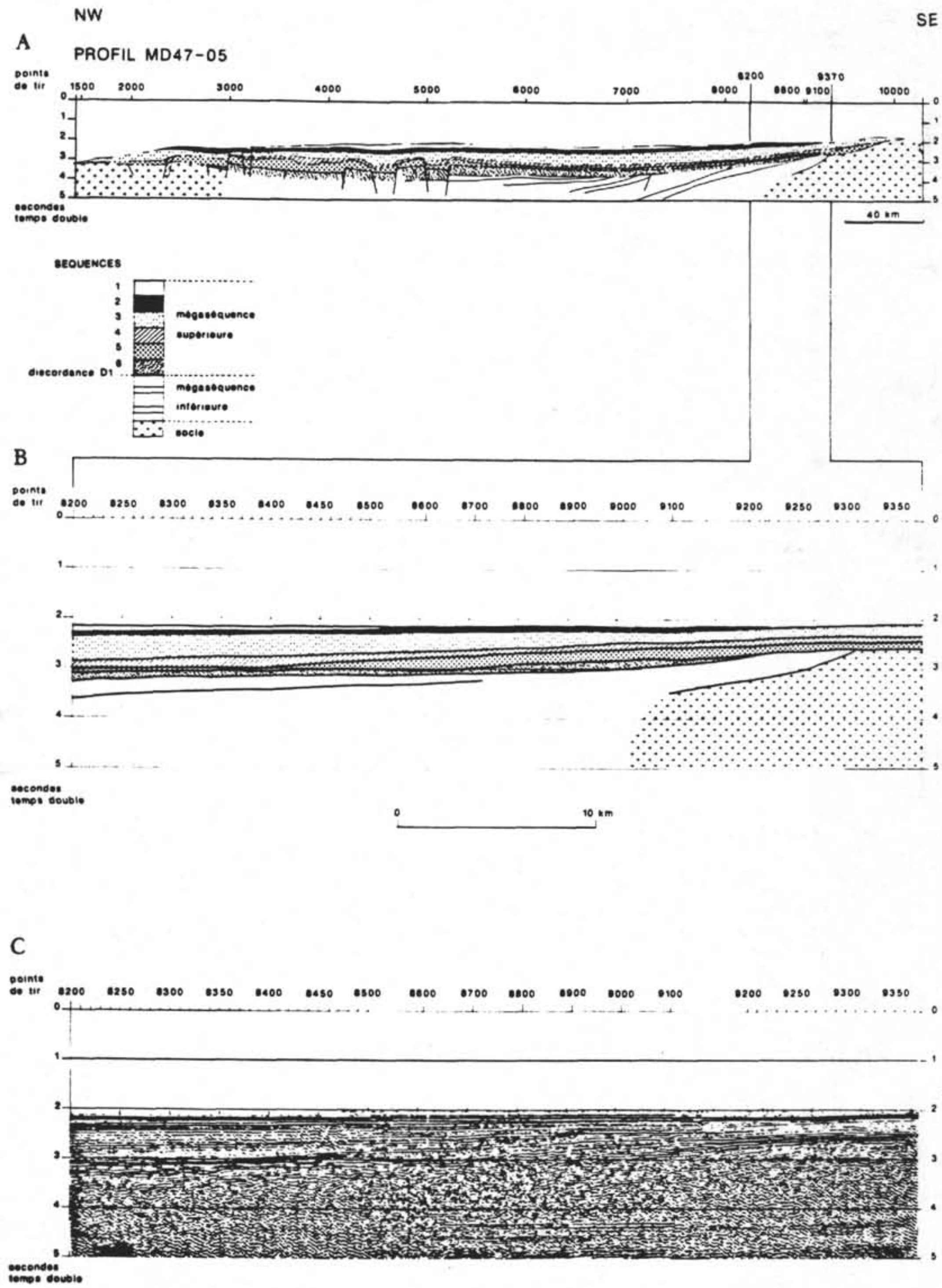


Figure 9b. Section along the Raggatt Basin derived from seismic interpretation: Line MD47-05 (Schlich et al., 1987).

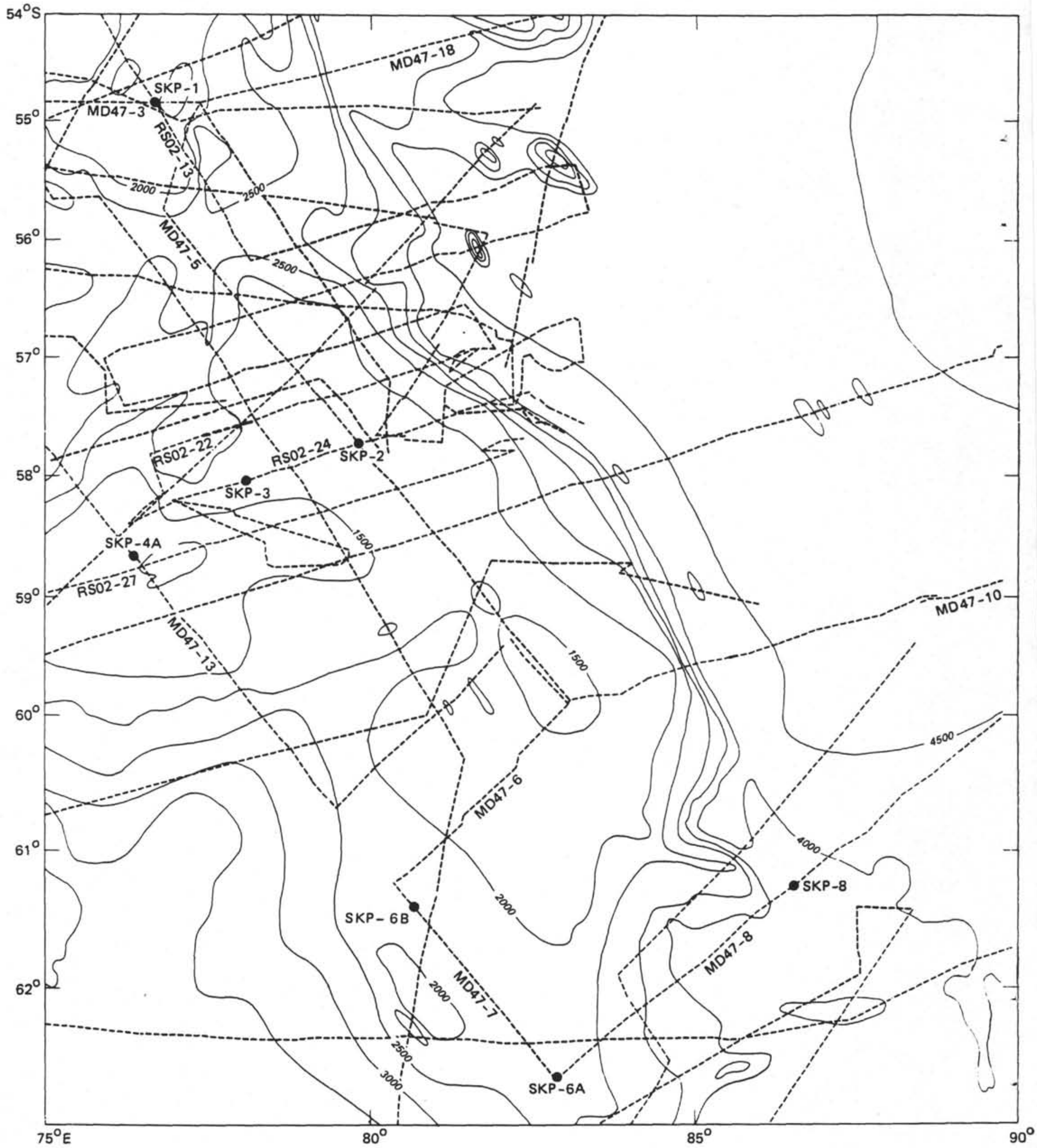


Figure 10. Site locations (Leg 120 sites: SKP-1, SKP-2, SKP-3, SKP-4A; Leg 119 sites: SKP-6A, SKP-6B, SKP-8). Bathymetry in meters.

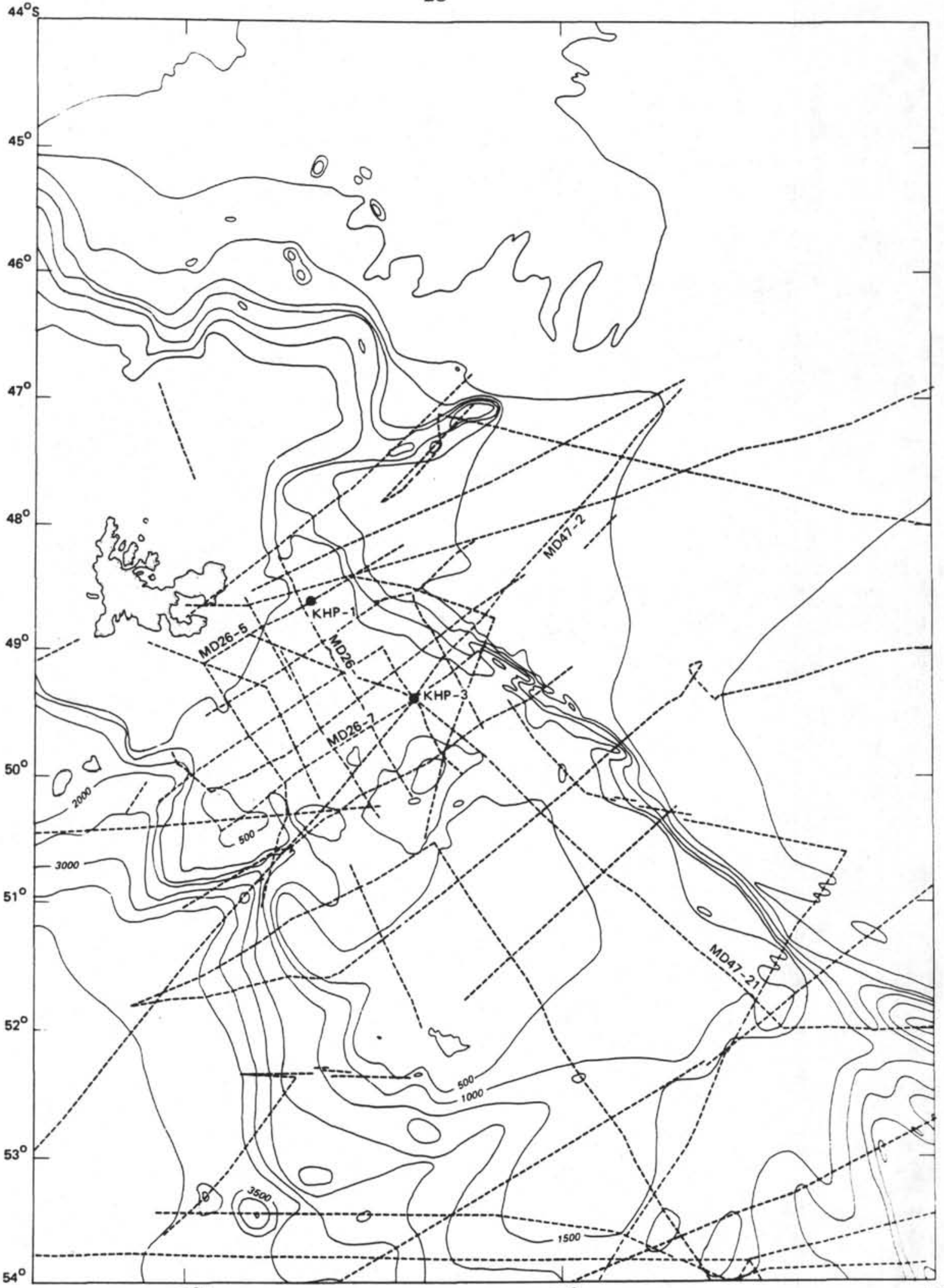


Figure 11. Site locations (Leg 119 site/Leg 120 alternate [deeper section]: KHP-1; Leg 119 and 120 alternate site: KHP-3). Bathymetry in meters.

SITE NUMBER: SKP-1 (Central Kerguelen Plateau)

POSITION: 54°48.8'S, 76°47.4'E   JURISDICTION: Australian

SEDIMENT THICKNESS: 400 m   PRIORITY: 1

WATER DEPTH: 1700 m

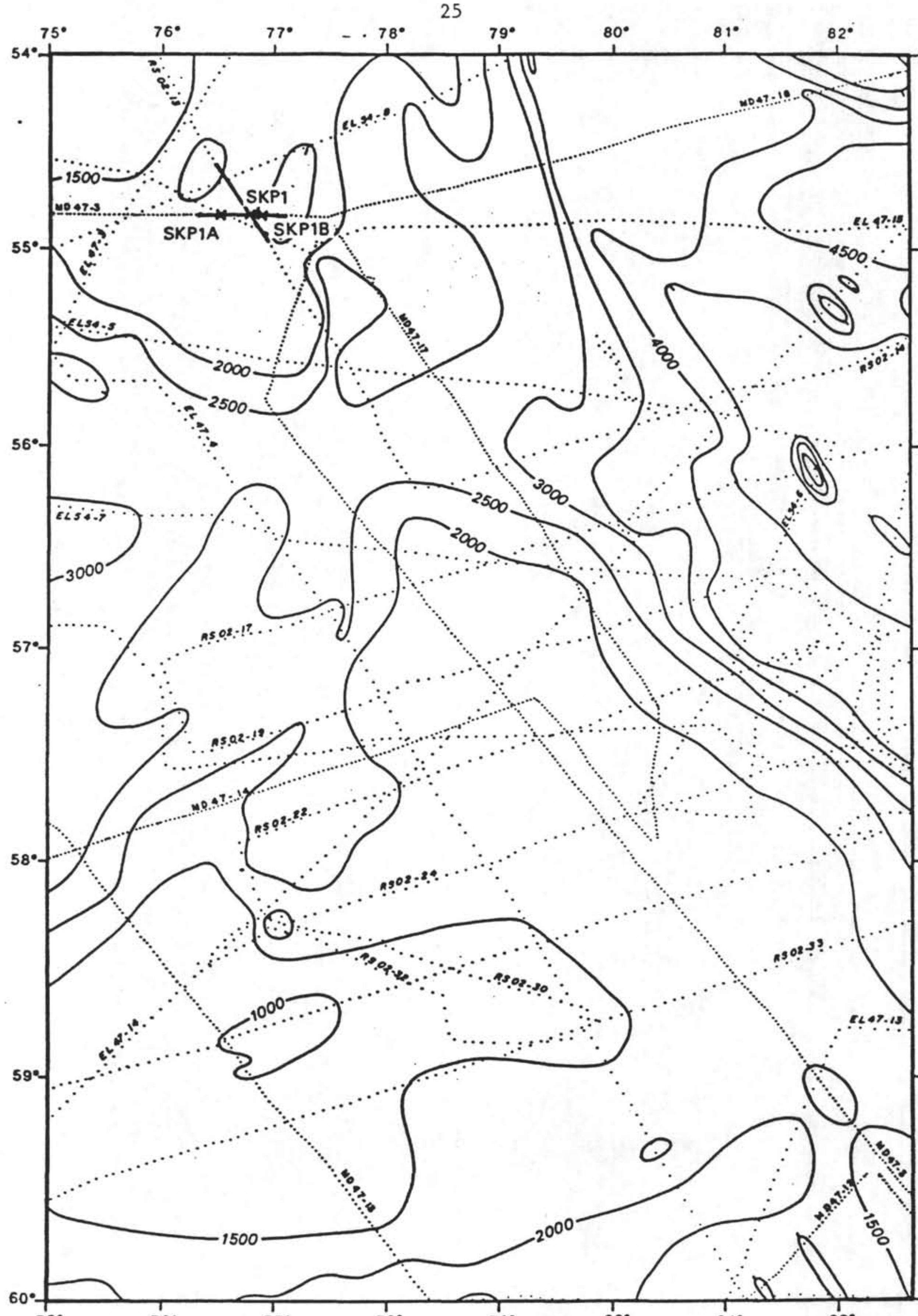
PROPOSED DRILLING PROGRAM:
Hole A: APC/XCB continuous coring to 200 mbsf or refusal.
Hole B: RCB continuous coring to 450 mbsf.

SEISMIC RECORD: Intersection of multichannel line RS 02-13, 28 March at 2115Z, and MD 47-03, shotpoint 11400.

LOGGING:
Standard Schlumberger (3 runs) and Borehole Televiewer (BHTV).

OBJECTIVES:
To recover basement from the northern region of the Kerguelen Plateau.

SEDIMENT TYPE:
Calcareous and siliceous ooze, chalk, chert, volcanics, basement.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76°
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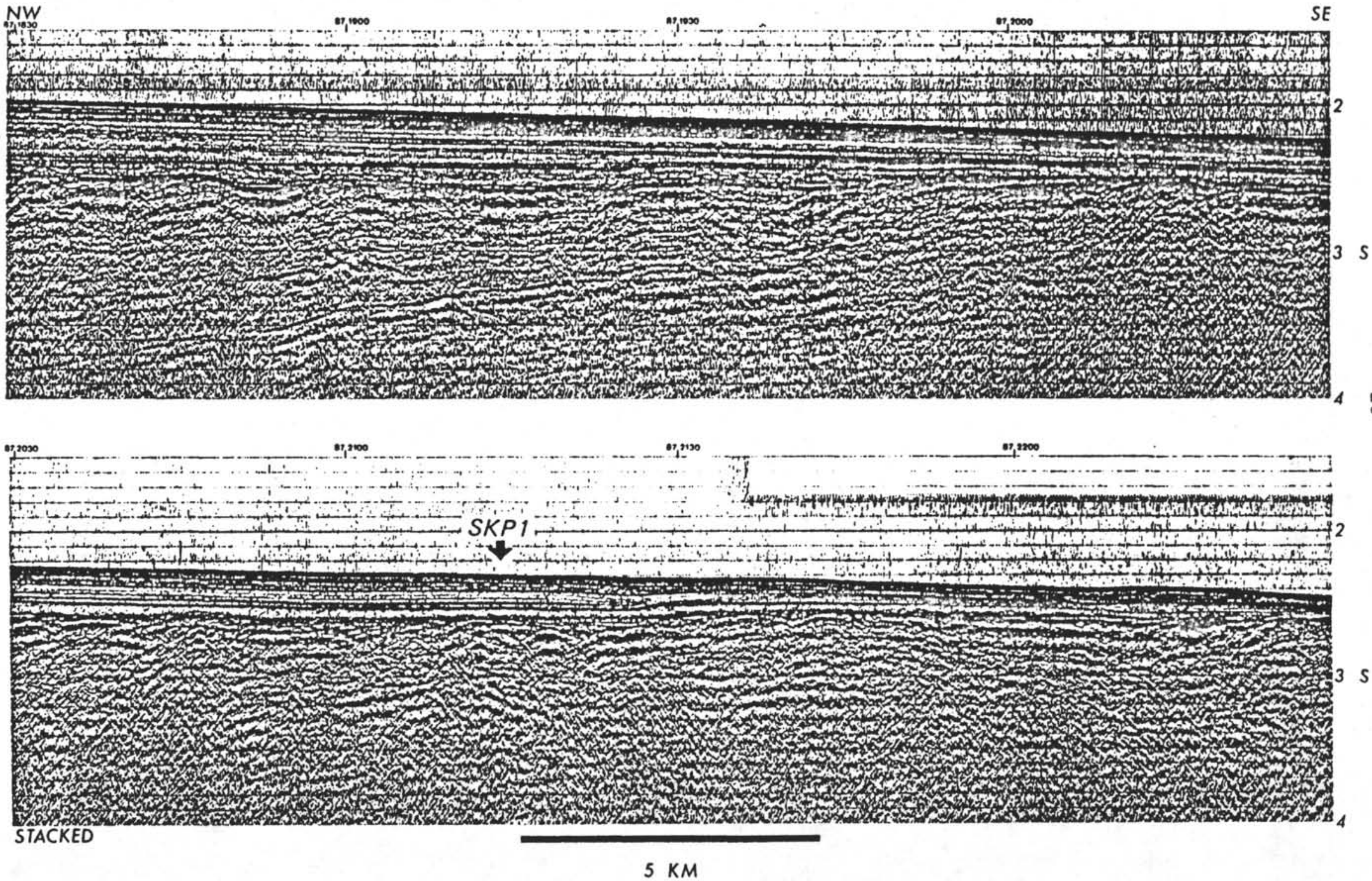
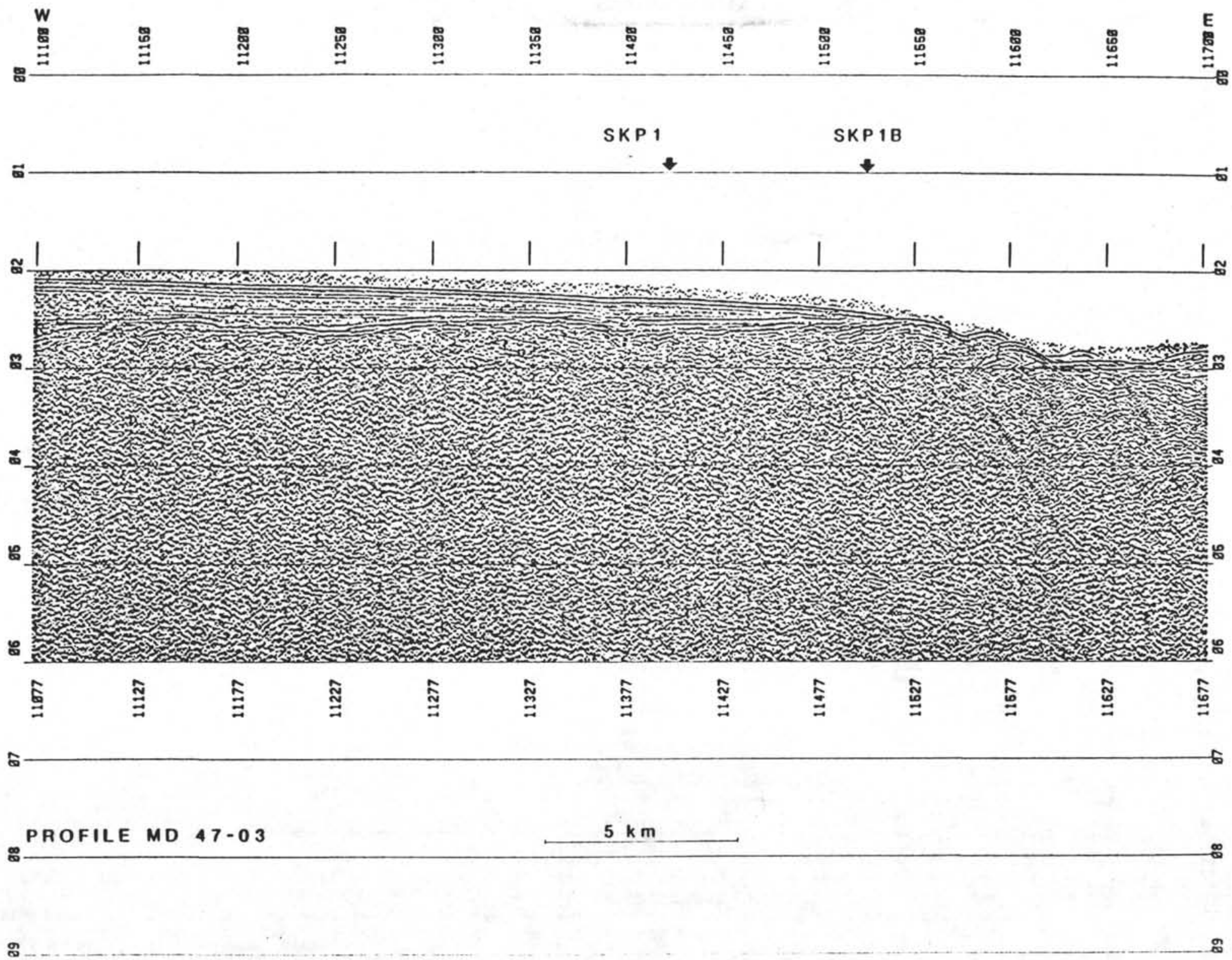
82°
54°
55°
56°
57°
58°
59°
60°
SKP1
SKP1A
SKP1B
1500
2000
2500
3000
4000
4500
1000
MD 47-3
MD47-18
MD47-17
MD 47-14
MD 47-18
MD47-5
EL 34-8
EL 47-3
EL34-5
EL 47-8
EL54-7
EL 47-15
EL34-6
EL 47-14
EL 47-13
RS 02-13
RS02-14
RS 02-17
RS 02-19
RS 02-22
RS02-24
RS 02-32
RS 02-30
RS02-33

RS2·13




W
11100 11150 11200 11250 11300 11350 11400 11450 11500 11550 11600 11650 11700 m
SKP1
SKP1B
11077 11127 11177 11227 11277 11327 11377 11427 11477 11527 11577 11627 11677
PROFILE MD 47-03
5 km

SITE NUMBER: SKP-2 (Central Part of Raggatt Basin)

POSITION: 57°48.9'S, 79°55.8'E JURISDICTION: Claimed by Australia

SEDIMENT THICKNESS: 3500 m(?) PRIORITY: 1

WATER DEPTH: 1660 m

PROPOSED DRILLING PROGRAM:

Option 1:
- Hole A: APC continuous coring to 150 mbsf.
- Hole B: APC/XCB continuous coring to 200 mbsf.
- Hole C: Drill to 200 mbsf, RCB continuous coring to 1100 mbsf.

Option 2:
- Hole A: APC to 150 mbsf.
- Hole B: APC/XCB continuous coring to 350 mbsf.
- Hole B: Drill to 320 mbsf, RCB continuous coring to 1650 mbsf with reentry.

SEISMIC RECORD: Intersection of multichannel line RS 02-24, 7 April at 1354Z; multichannel line MD 47-05, shotpoint 5838.

LOGGING:

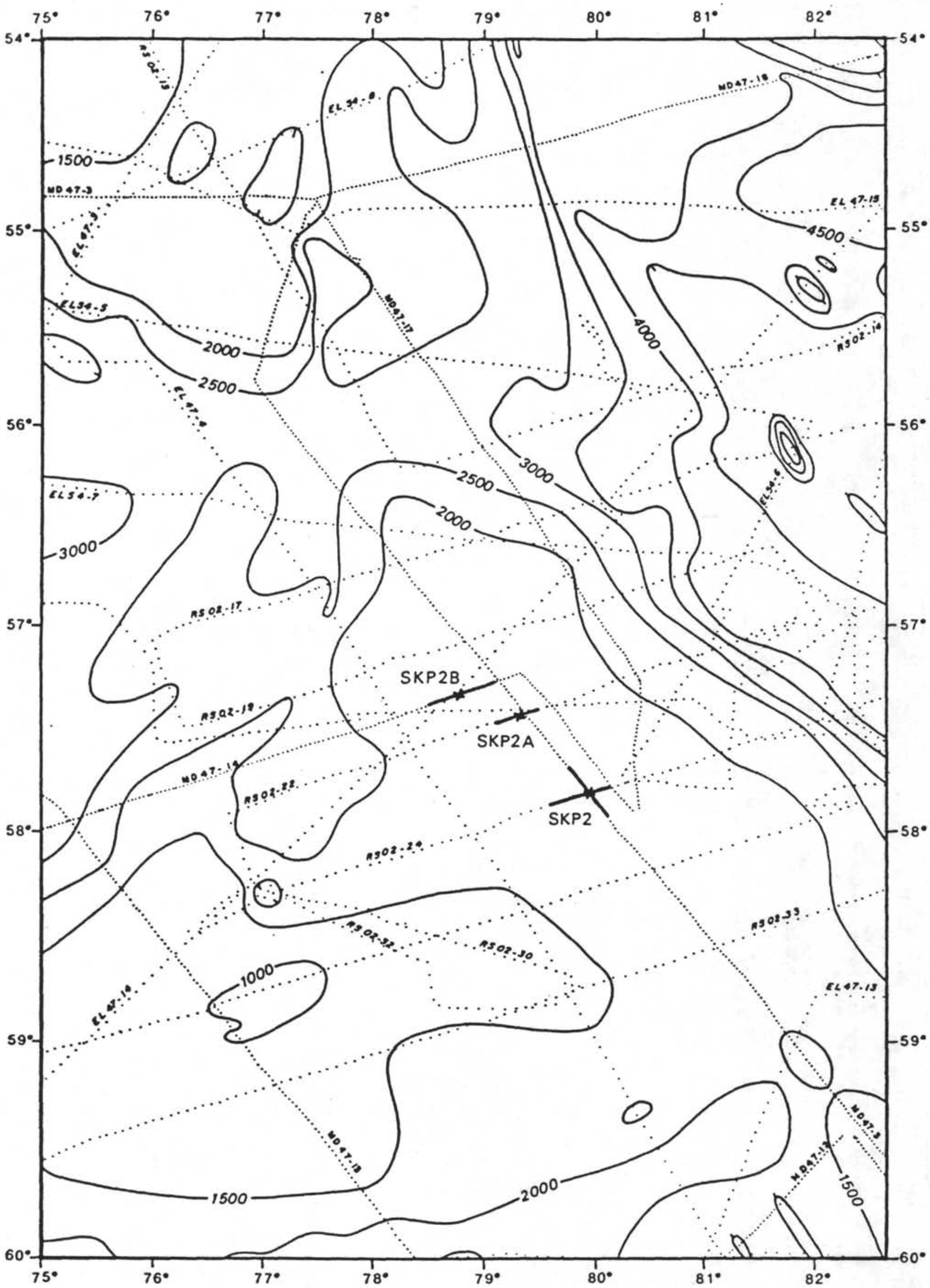
Standard Schlumberger (3 runs).
A vertical seismic profile (VSP) may be conducted at this site.

OBJECTIVES:

To obtain a high-resolution Neogene and Paleogene stratigraphic section from the southern Kerguelen Plateau.

SEDIMENT TYPE:

Calcareous and siliceous ooze, chalk, chert and volcanics.



75° 76° 77° 78° 79° 80° 81° 82°
54° 55° 56° 57° 58° 59° 60°
1500
2000
2500
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4500
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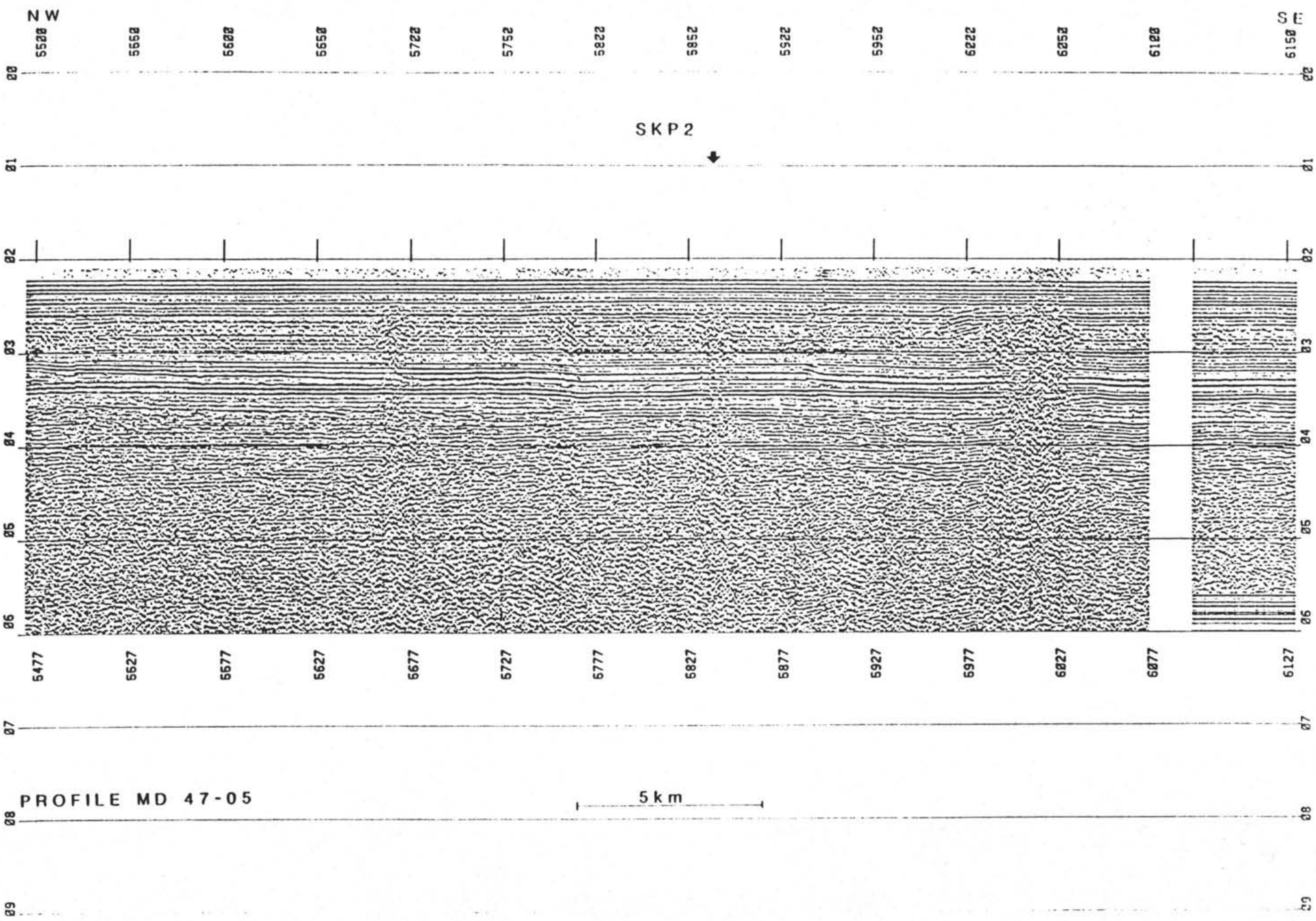
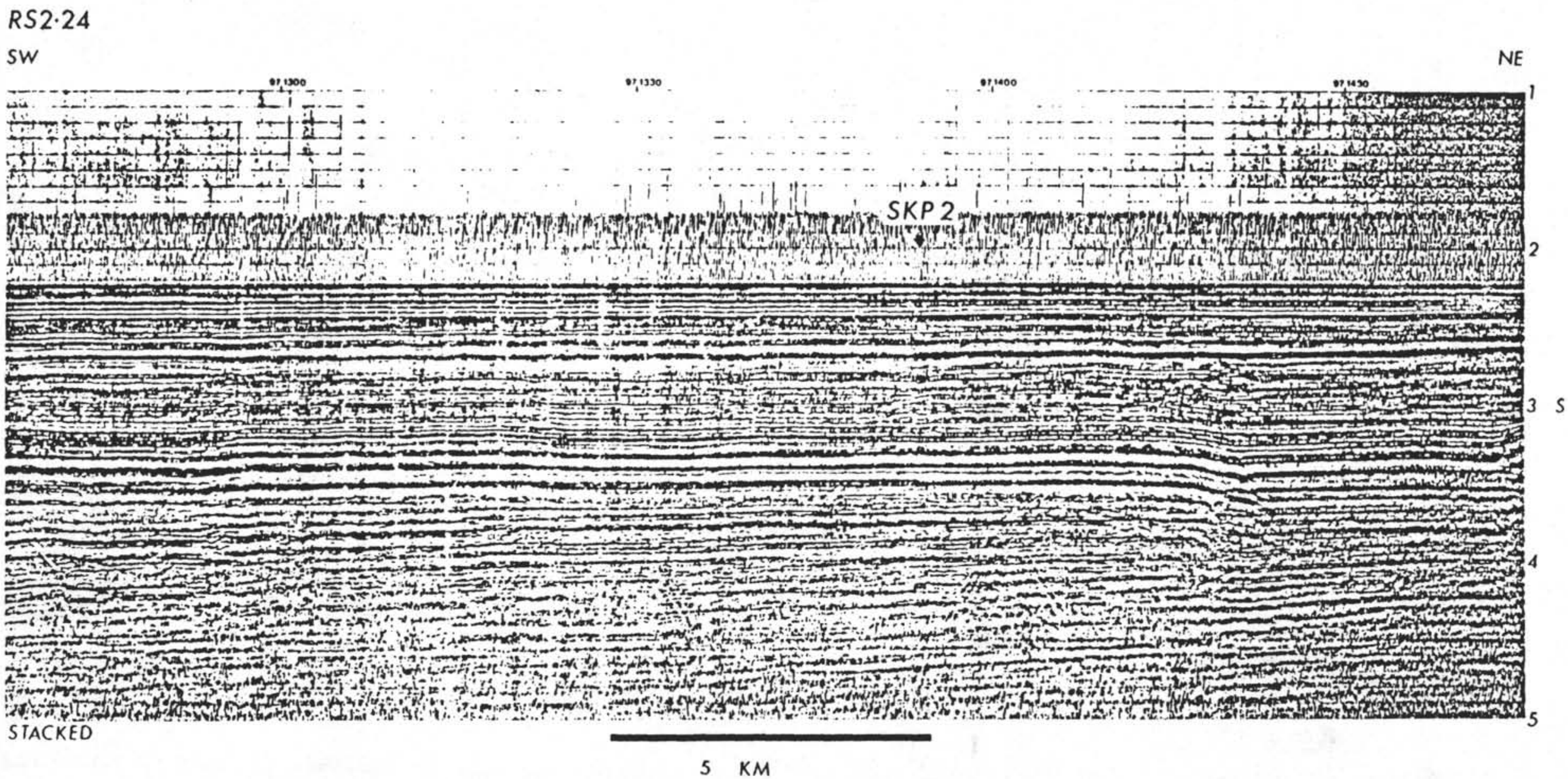
EL 47-15
EL54-5
EL 47-8
EL54-7
MD47-17
MD47-16
MD47-14
MD47-13
MD47-8
RS02-14
RS02-17
RS02-19
RS02-22
RS02-24
RS02-30
RS02-33
EL47-13
EL47-14
SKP2B
SKP2A
SKP2


NW
SE
SKP2
PROFILE MD 47-05
5 km



RS2·24
SW
NE
SKP 2
1
2
3 S
4
5
STACKED
5 KM

SITE NUMBER: SKP-3 (Western Flank of Raggatt Basin)

POSITION: 58°07.6'S, 78°11.4'E   JURISDICTION: Claimed by Australia

SEDIMENT THICKNESS: 1300 m(?)   PRIORITY: 2

WATER DEPTH: 1500 m

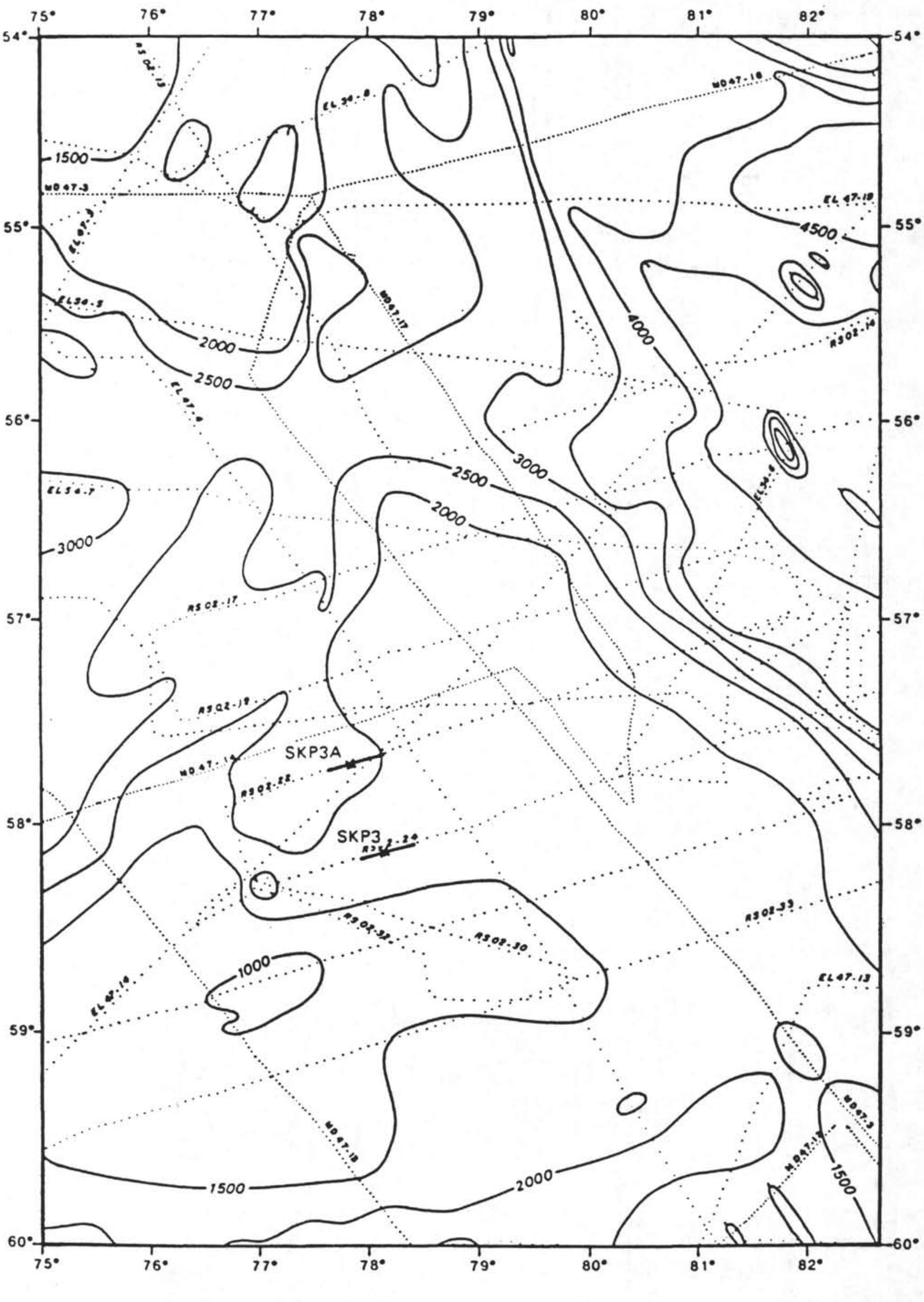
PROPOSED DRILLING PROGRAM:
Hole A: APC continuous coring to 150 mbsf or refusal.
Hole B: Drill to 150 mbsf, RCB continuous coring to 800 mbsf.

SEISMIC RECORD: Multichannel line RS 02-24, 7 April at 0415Z.

LOGGING:
Standard Schlumberger (3 runs).

OBJECTIVES:
To recover an expanded section of Paleogene sediments reflecting the earlier history of the southern Kerguelen Plateau.

SEDIMENT TYPE:
Calcareous and siliceous ooze, chalk, chert and volcanics.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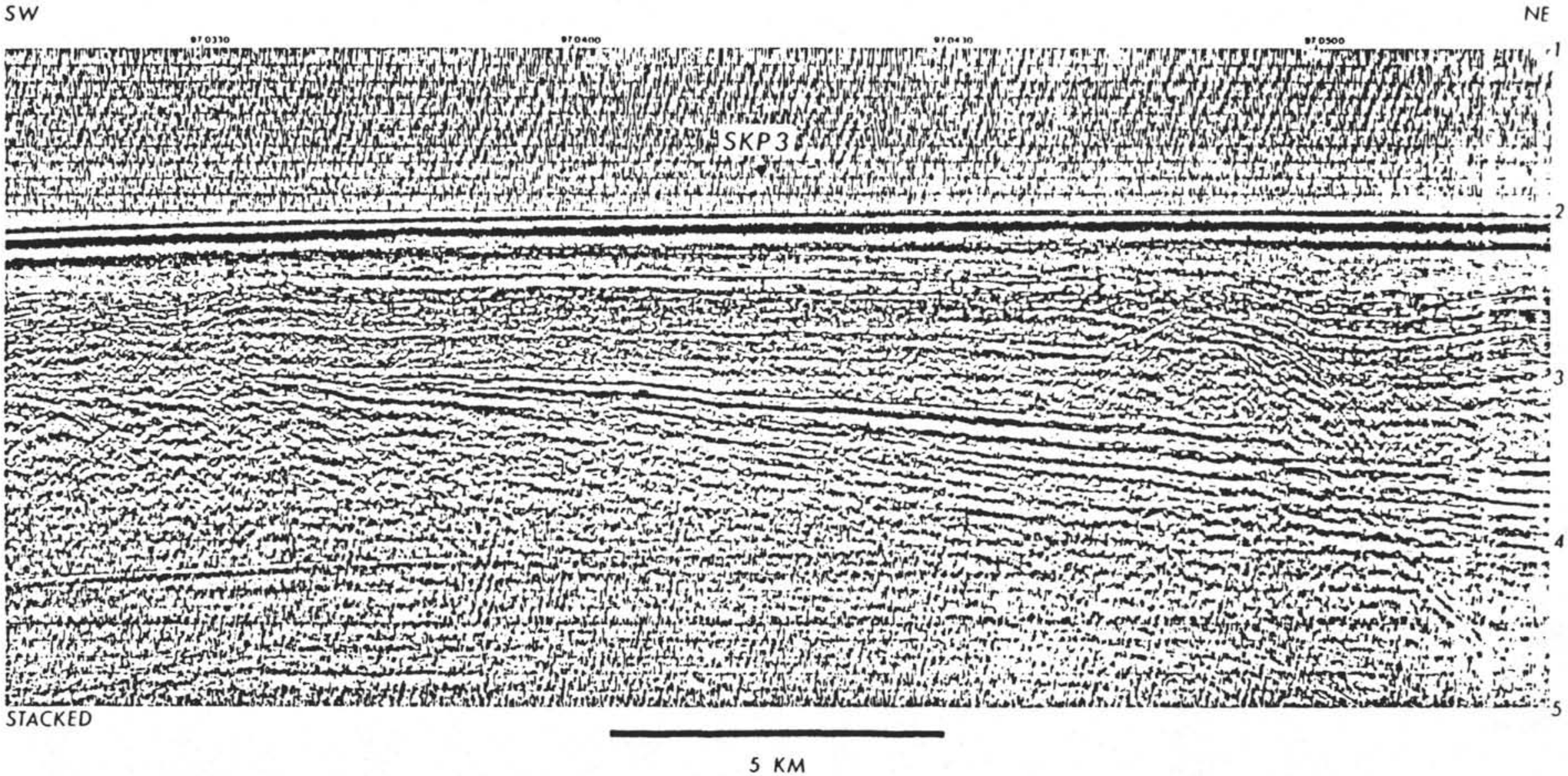
4000
4500
1000
SKP3A
SKP3
EL 47-19
EL 47-13
EL 34-8
EL 34-5
EL 34-7
EL 47-8
EL 47-3
EL 34-6
EL 47-16
MD 47-3
MD 47-18
MD 47-17
MD 47-14
MD 47-15
MD 47-12
RS 02-13
RS 02-14
RS 02-17
RS 02-19
RS 02-22
RS 02-32
RS 02-30
RS 02-33

RS2·24



SITE NUMBER: SKP-4A (Western Banzare Bank)

POSITION: $58^{o}43.0'S$, $76^{o}24.4'E$ JURISDICTION: Claimed by Australia

SEDIMENT THICKNESS: 300 m PRIORITY: 1

WATER DEPTH: 1160 m

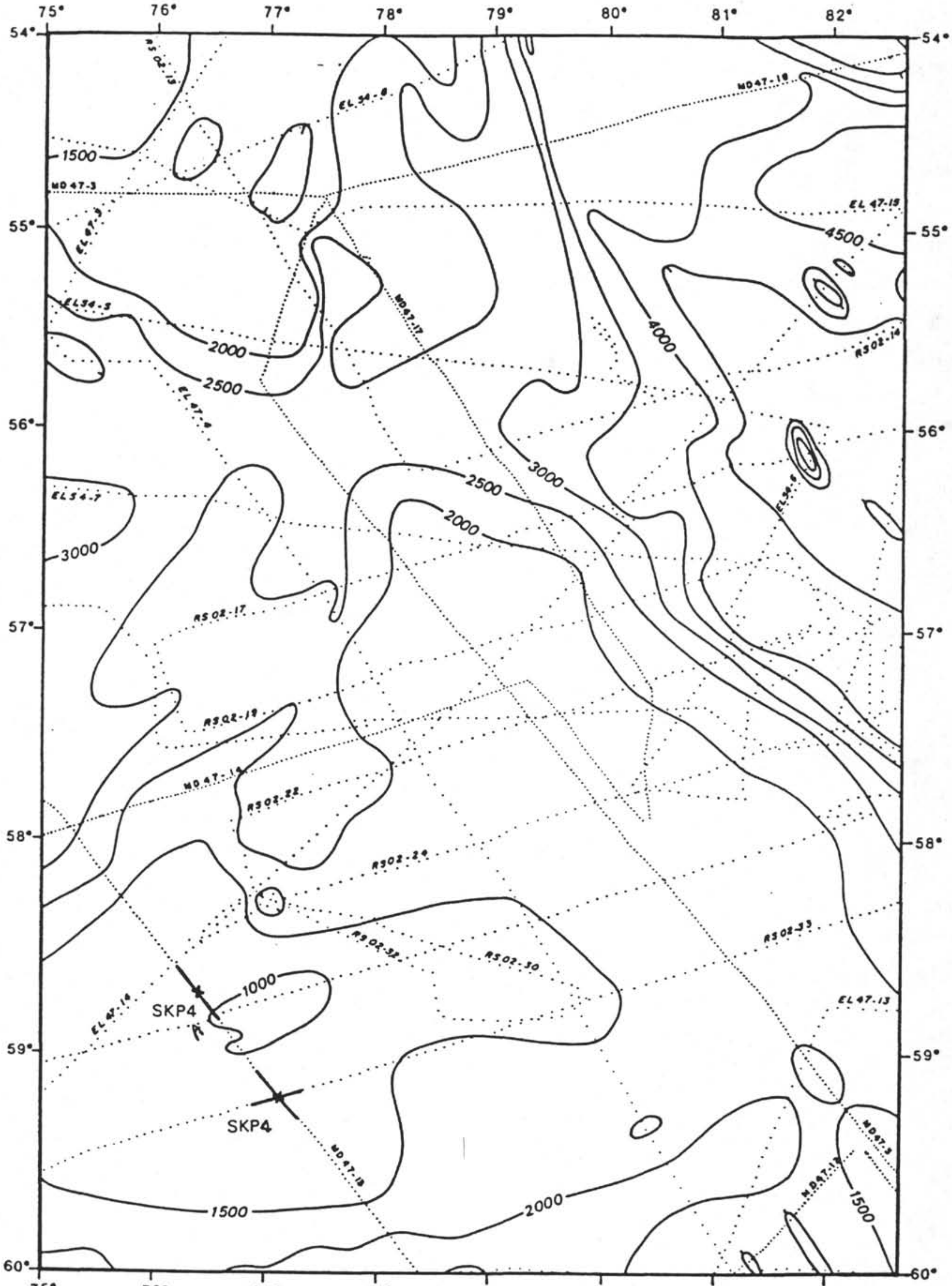
PROPOSED DRILLING PROGRAM:
Hole A: APC/XCB continuous coring to 250 m or refusal.
Hole B: Drill to 260 mbsf, set reentry cone, RCB continuous coring to 450 mbsf (200 m basement).

SEISMIC RECORD: Multichannel line MD 47-13 at shotpoint 5670, near RS 02-27, 11 April at 1350Z.

LOGGING:
Standard Schlumberger (3 runs) and Borehole Televiewer (BHTV).

OBJECTIVES:
To recover basement from the southern Kerguelen Plateau.

SEDIMENT TYPE:
Calcareous and siliceous ooze, chalk, volcanics and basement.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SKP4
SKP4
MD47-3
MD47-18
MD47-17
MD47-14
EL54-8
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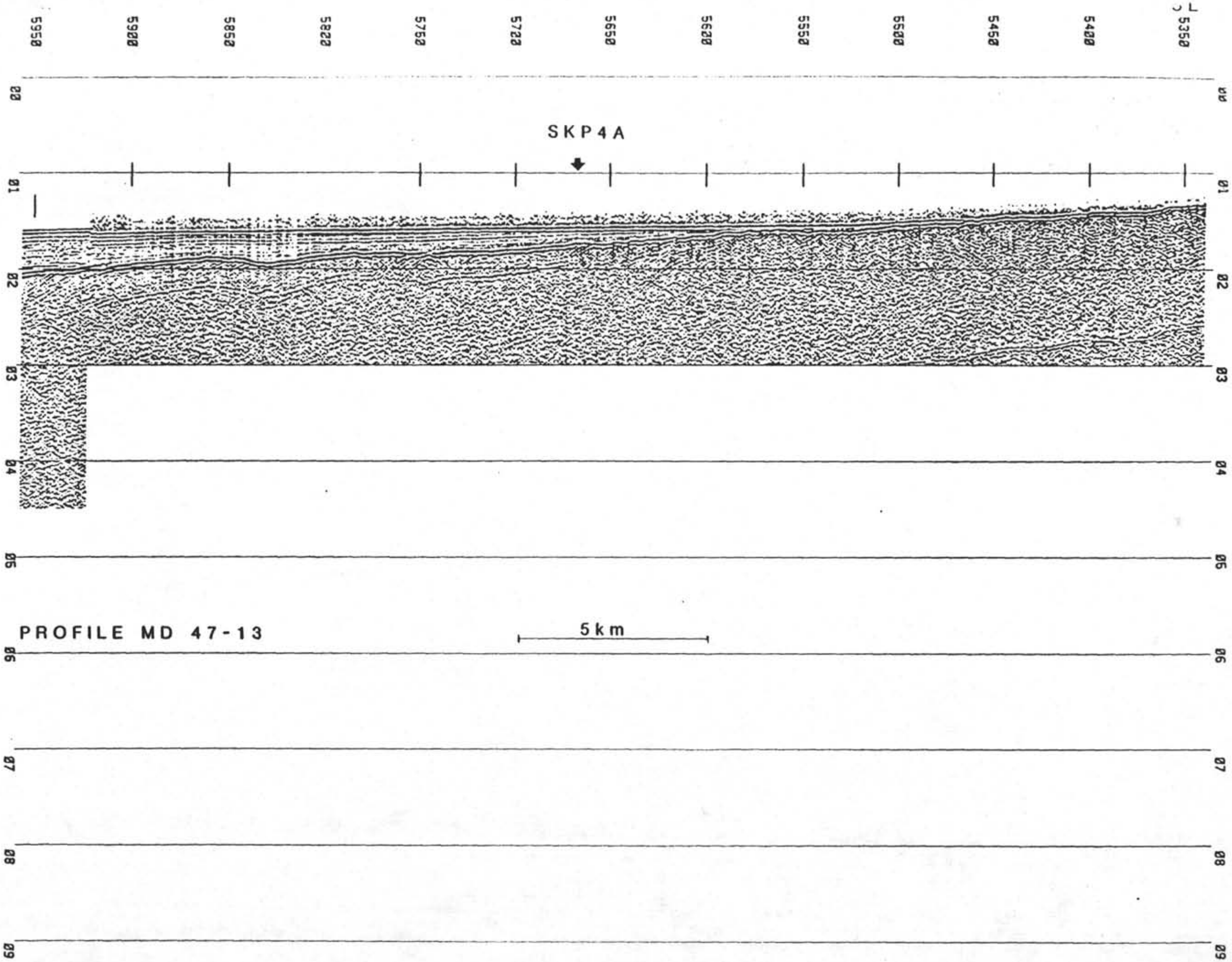
RS02-30
RS02-33


5950
5900
5850
5800
5750
5700
5650
5600
5550
5500
5450
5400
5350
SKP4A
PROFILE MD 47-13
5km

SITE NUMBER: KHP-1 (Kerguelen-Heard Plateau)

POSITION: 49°23.6'S, 71°39.5'E JURISDICTION: French

SEDIMENT THICKNESS: 3170 m PRIORITY: 4

WATER DEPTH: 660 m

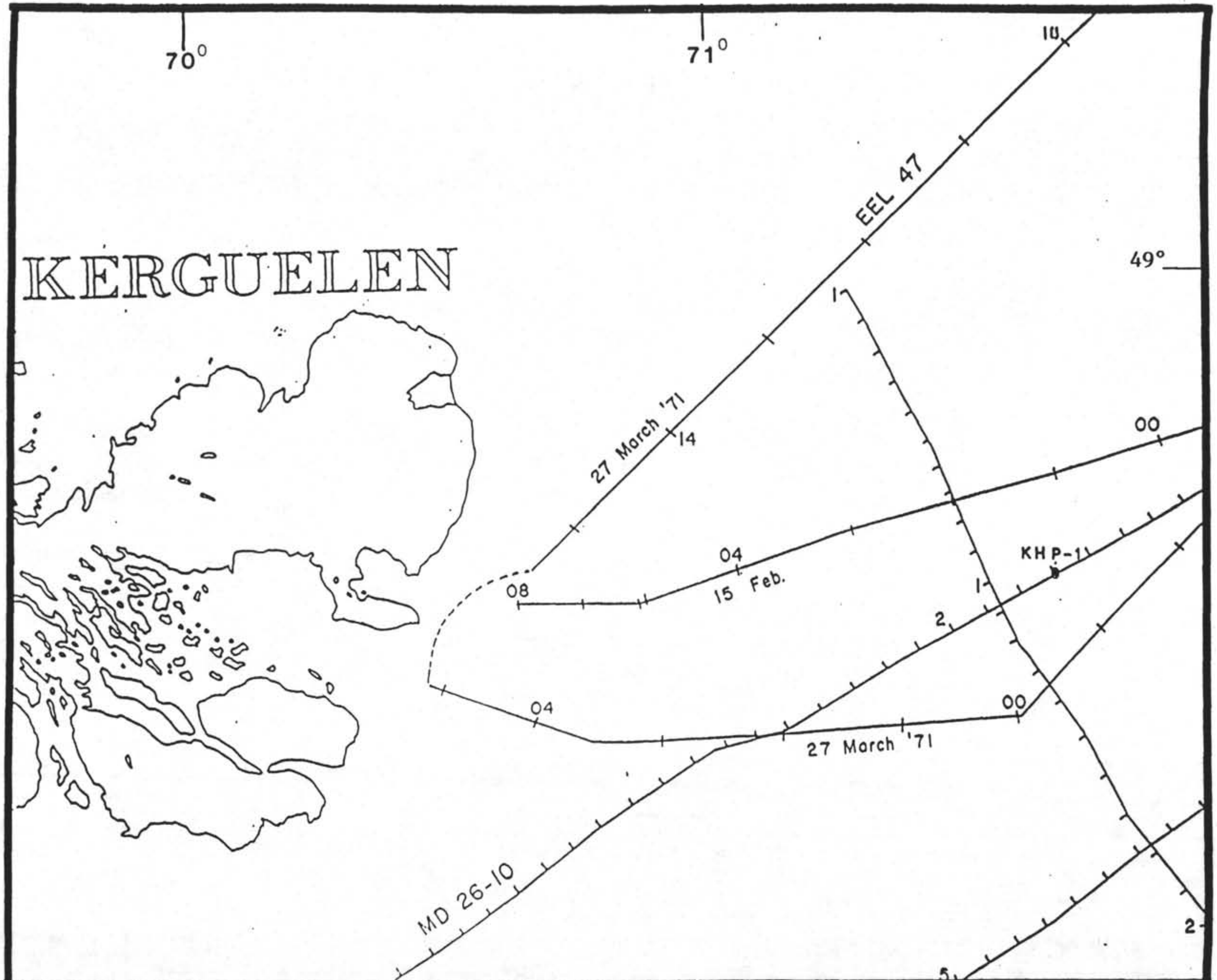
PROPOSED DRILLING PROGRAM:
The drilling program at Site KHP-1 (if drilled during Leg 120) depend on results from Leg 119. Plans are for Leg 119 to drill at least to 910 mbsf at this site; Leg 120 could increase this to a maximum of 1400 mbsf.

SEISMIC RECORD: Multichannel line MD 26-10 at shotpoint 2300, near line MD 26-04 at shotpoint 1080.

LOGGING:
Standard Schlumberger (3 runs).
A vertical seismic profile (VSP) may be conducted at this site during Leg 119 and/or Leg 120.

OBJECTIVES:
To obtain a complete stratigraphic record from Oligocene to Holocene; to sample and date the major unconformity; to document the tectonic (rifting from Broken Ridge) and subsidence history from the Eocene to Holocene; and to determine the evolution of Kerguelen Island.

SEDIMENT TYPE:
Calcareous ooze with siliceous biogenic components, diatomaceous ooze, chalk, glauconitic sand, and clastic deposits.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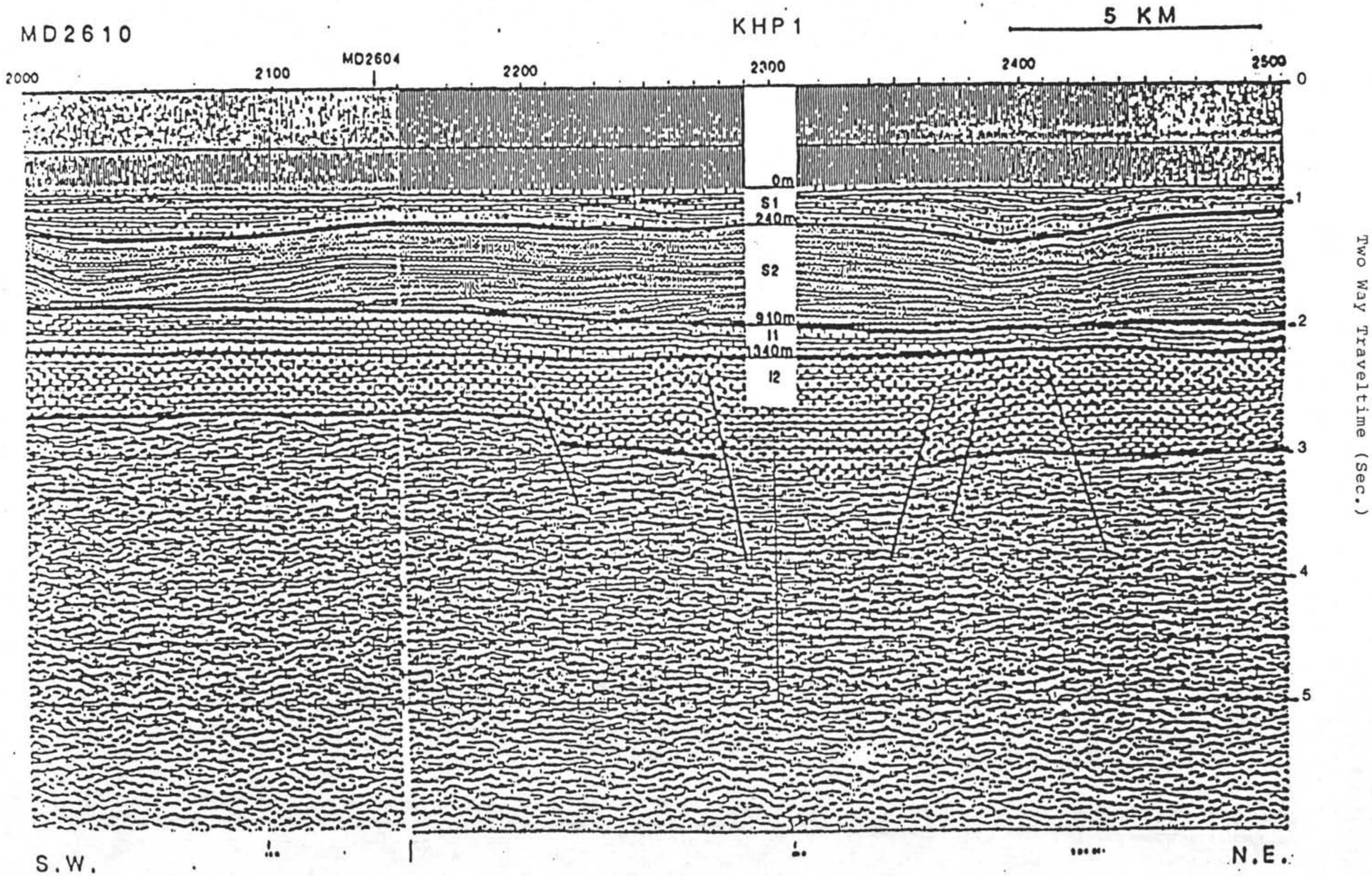
71°
KERGUELEN
EEL 47
27 March '71
14
10
49°
00
04
15 Feb.
08
KHP-1
1
2
04
00
27 March '71
MD 26-10
5
2


MD2610
KHP1
5 KM
MD2604
2000
2100
2200
2300
2400
2500
0
1
2
3
4
5
0m
S1
240m
S2
910m
I1
1340m
I2
S.W.
N.E.
Two Way Traveltime (Sec.)

SITE NUMBER: KHP-3 (Kerguelen-Heard Plateau)

POSITION: 50°14.2'S, 73°02.5'E JURISDICTION: French

SEDIMENT THICKNESS: 1670 m PRIORITY: 3

WATER DEPTH: 570 m

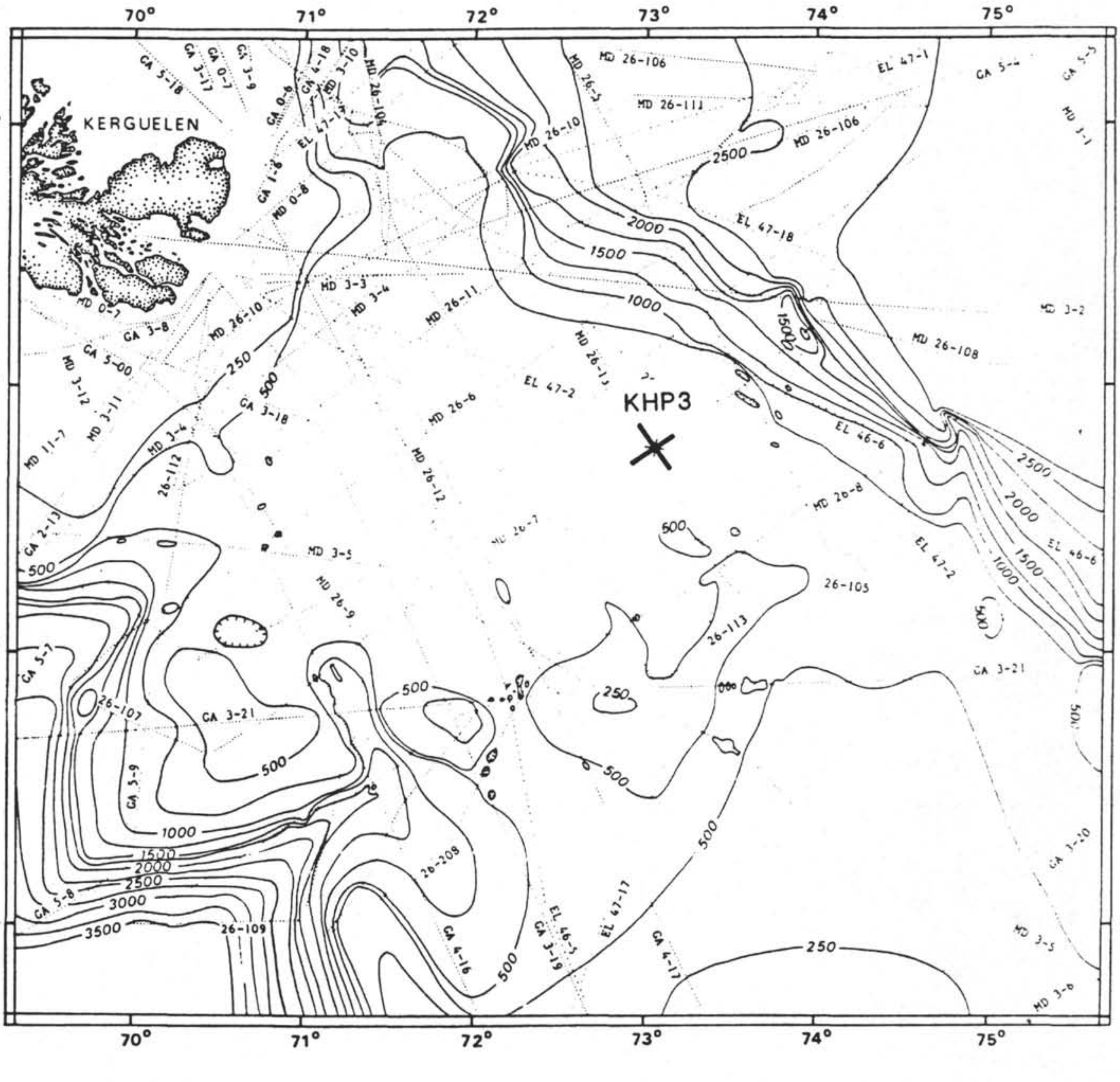
PROPOSED DRILLING PROGRAM:
Hole A: APC/XCB continuous coring to 250 mbsf.
Hole B: RCB continuous coring with reentry to 1700 mbsf.

SEISMIC RECORD: Intersection of multichannel lines MD 26-07 (shotpoint 4120) and MD 26-13 (shotpoint 1630).

LOGGING:
Standard Schlumberger (3 runs).
A vertical seismic profile (VSP) may also be conducted.

OBJECTIVES:
To obtain a complete stratigraphic record from Eocene to Upper Cretaceous; to sample and date the major unconformity; to determine the age and nature of the basement underlying the plateau; to study the tectonic and subsidence history from the Late Cretaceous to Eocene.

SEDIMENT TYPE:
Diatomaceous glauconitic sand, calcareous ooze and chalk, chert, basement.


KERGUELEN
KHP3
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72°
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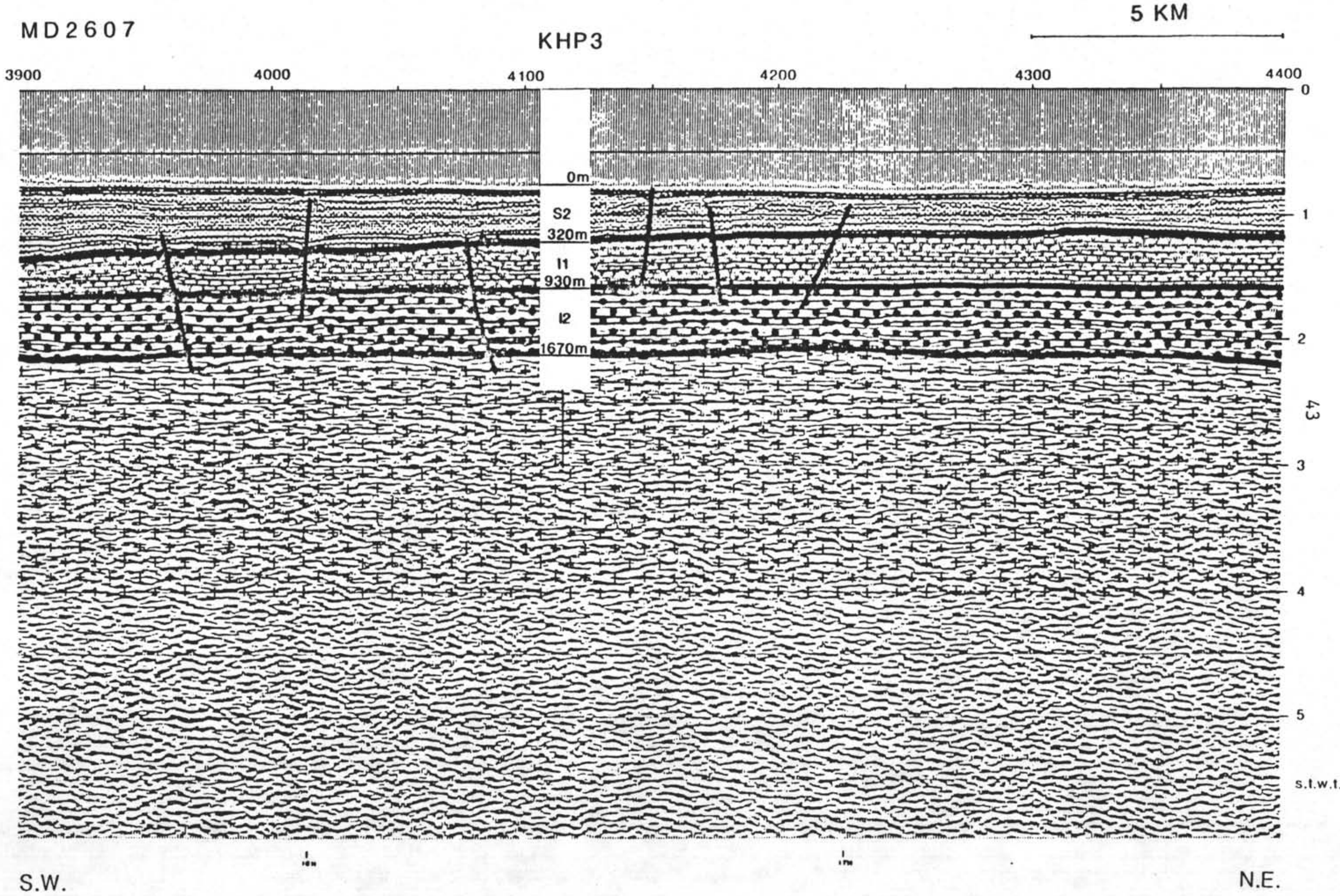
MD2607
KHP3
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4000
4100
4200
4300
4400
0m
S2
320m
I1
930m
I2
1670m
0
1
2
3
4
5
s.t.w.t.
S.W.
N.E.

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Chemistry Technician:	JOE POWERS Ocean Drilling Program Texas A&M University College Station, TX 77840
Marine Technician:	WENDY AUTIO Ocean Drilling Program Texas A&M University College Station, TX 77840
Marine Technician:	~~DENNIS DUVAL~~ Holik Ocean Drilling Program Texas A&M University College Station, TX 77840
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Weather Observer: ~~TO BE NAMED~~