

**I.O.S.**

RRS SHACKLETON CRUISE 1/75

25 JANUARY – 8 FEBRUARY 1975

GEOCHEMICAL SAMPLING ON THE  
SOUTH WEST AFRICAN SHELF

CRUISE REPORT NO.18

1975



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Institute of Oceanographic Sciences,  
Wormley,  
Godalming,  
Surrey.

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### Itinerary

Departed Freetown, Sierra Leone 25 January 1975 arrived Cape Town, South Africa 9 February 1975.

### Scientific Personnel

J.M. Bremner	(University of Cape Town)	Walvis Bay - Cape Town
S.E. Calvert	(IOS)	(Principal Scientist)
R.J. Morris	(IOS)	
J. Price	(IOS)	

### Objective of Cruise

Previous work off South West Africa had shown that extremely organic-rich sediments, with relatively high concentrations of certain trace elements, are accumulating on the middle part of the shelf. The objective of the cruise was to sample the sediments, both on the shelf and on the upper slope, for a detailed examination of the organic geochemistry and the association of trace metals and organic matter in these unusual sediments.

### Narrative

Shackleton sailed from Freetown at 1000 on 25 January 1975. The 10 kHz PDR, using the hull transducer, was started at 1030 and normal depth recording proceeded. A course was set for Walvis Bay at 1450 at a speed of 10 knots.

An XBT was launched at 1335/3 February after encountering a distinct change in sea colour, from blue to a distinctive pale green, as we approached the continental slope. The first station (Fig. 2) was reached at 1206/4 February; three gravity core samples were collected and an XBT launched. The echo-sounder fish was launched and echo-sounding was continued using the PES. Two further stations were occupied, at 2106/4 February and 0040/5 February before arriving off Pelican Point, Walvis Bay at 0530/4 February in thick fog.

Mr. J.M. Bremner, of the Geology Department, University of Cape Town, joined the ship at 0600/4 February. After a core sample had been taken at the anchorage, Shackleton left Walvis Bay and steamed to occupy a series of stations on an east-west profile off Walvis Bay. Core samples were collected at each station, an oblique plankton tow was attempted on the penultimate station and the work was completed at 1936/5 February. Course was then set for Cape Town, arriving at 0710/9 February.

### Sediment Sampling

A stainless steel gravity corer, using a 1m barrel and 10cm diameter cellulose acetate butyrate liners, was used to collect the sediment samples. Details of the station positions and the cores obtained are given in Table 1. A prominent sub-bottom reflection was observed along some of the track on the inner part of the shelf (Fig. 2), the acoustically transparent layer, up to 15m thick, representing the fluid, organic-rich muds which were of interest.

The cores were sealed top and bottom and frozen in an upright position immediately after collection. The cores were subsampled when frozen; sections were packed in an insulated container in dry ice and returned to U.K. from Cape Town by air.

Table 1.

Station List

Station No.	Date (1974)	Position		Depth (Metres)	Gear	Results
		S. Lat	E. Long			
1244	3.ii	18° 59.6'	10° 09.0'	3751	XBT	
1245	4.ii	21° 54.7'	12° 35.0'	362	XBT	
1246	4.ii	21° 54.7'	12° 35.0'	362	GC	3 cores
1247	4.ii	21° 15.0'	13° 40.0'	130	GC	3 cores
1248	5.ii	22° 35.0'	13° 45.0'	127	GC XBT	1 core
1249	5.ii	22° 50.5'	14° 28.5'	27	GC	2 cores
1250	5.ii	22° 57.0'	14° 00.0'	134	GC XBT	1 core
1251	5.ii	22° 58.2'	13° 57.8'	140	GC XBT PT	1 core
1252	5.ii	23° 04.2'	12° 58.8'	526	GC	1 core

Abbreviations

GC Gravity corer

XBT Expendable bathythermograph

PT Oblique plankton tow.

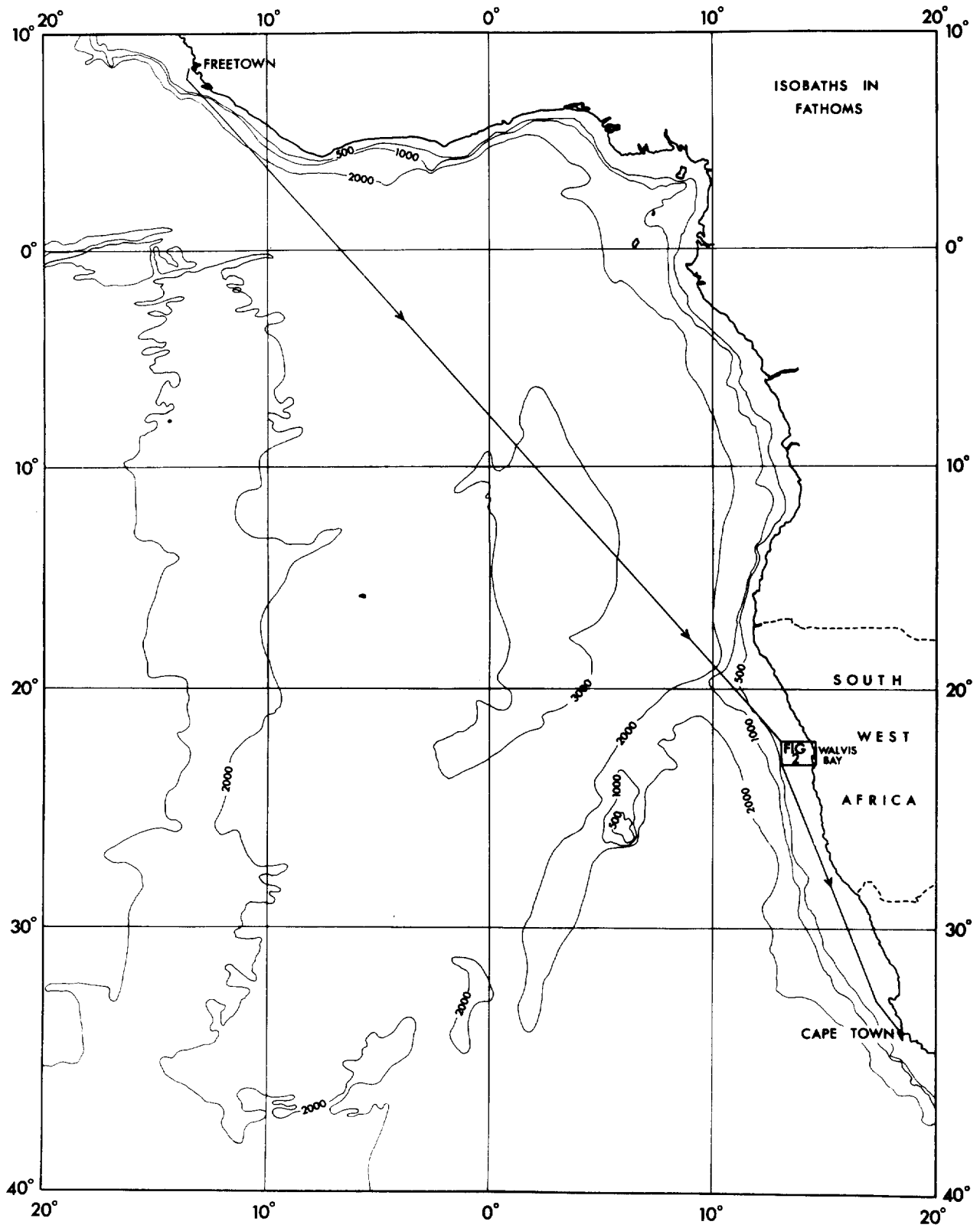


Figure 1

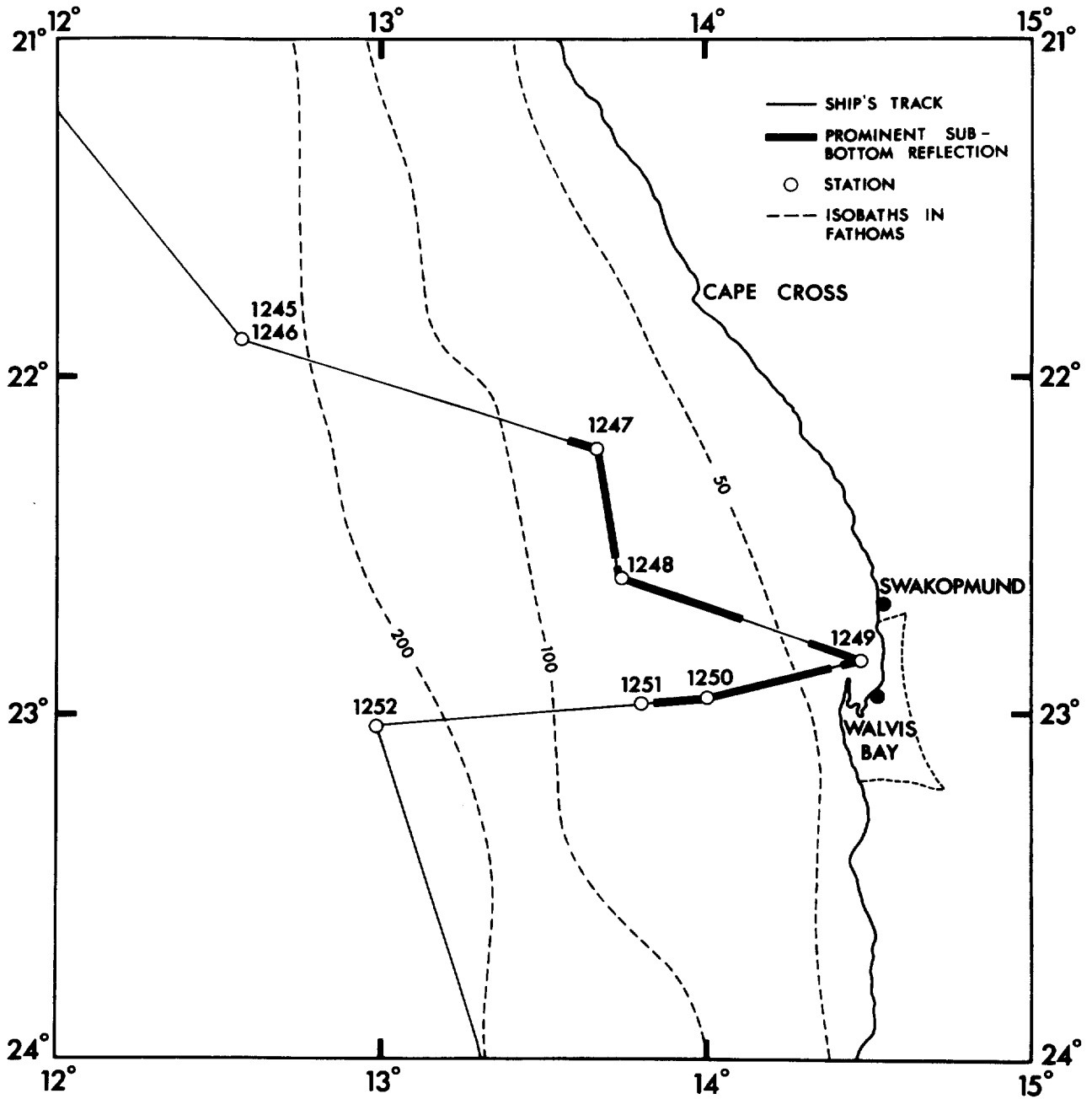


Figure 2