

Report on Oceanographic Cruise of O. R. V. Sagar Kanya

CRUISE No. 27 B

26th November to 8th December 1986



**National Institute of Oceanography
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REPORT ON
27 B OCEANOGRAPHIC CRUISE OF
O.R.V. SAGAR KANYA

(26th November to 8th December, 1986)

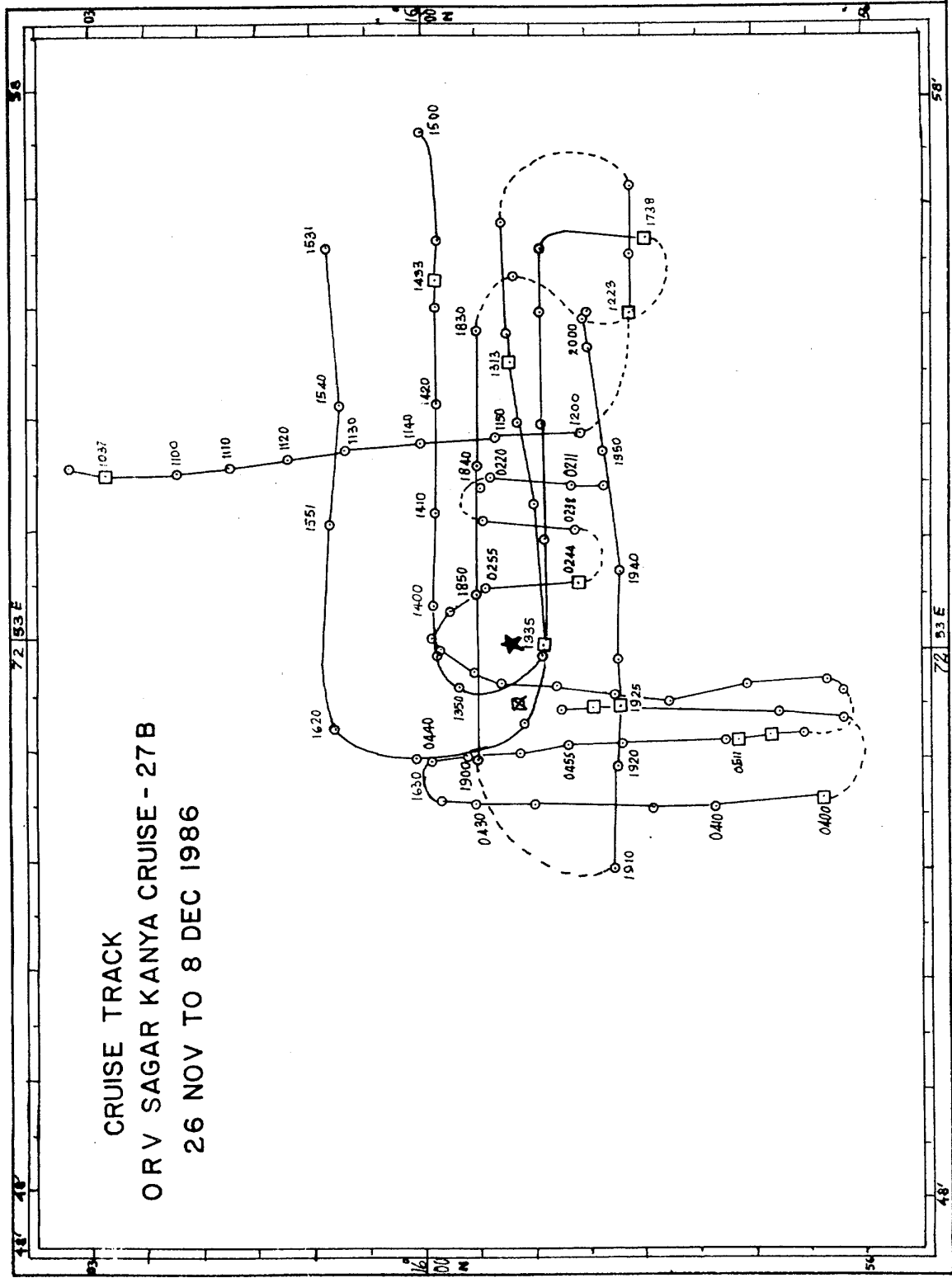
REPORT ON THE 27 B OCEANOGRAPHIC CRUISE OF
O.R.V. SAGAR KANYA

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CRUISE TRACK
ORV SAGAR KANYA CRUISE - 27B
26 NOV TO 8 DEC 1986



2. SUMMARY

ORV SAGAR KANYA Cruise 27B was fully devoted for the testing of the Underwater Electric Rock core Drilling System. This system is helpful in obtaining bed-rock samples from continental shelf areas. It can be used from scientific research vessels without special power, navigation or handling facilities.

The sites were identified based on the records and the results of the previous cruises in general and cruise 158 of R.V. Gaveshani in particular. During the cruise four drilling operations were performed at two different sites. The preliminary results were quite encouraging. Of the four drilling operations, the samples could be collected in three of them. The longest rock core being of 23.5 cms in length.

This Underwater Electric Rock Core Drilling system was operated for the first time in India to collect sea bed rocks for the R & D projects.

3. PARTICIPANTS

(a) Scientific component

N.H. Hashimi	-	Chief Scientist
K.H. Vora)	
S.M. Karisiddaiah)	
P. Divakar Naidu)	
P. Marathe)	
A.S. Muralinath)	
P.G. Mislankar)	National Institute of Oceanography, Dona Paula, Goa.
A.V. Sonavane)	
G. Janakiraman)	
K.M. Sivakolundu)	
G.A. Walker)	
R.A.A. Luis)	
P. Mohan	-	Cochin University
D.B. Ararker)	
F.N. Rebello)	
A.J.M. Lopes)	Goa University
G.I. Viegas)	

(b) Ship's complement

Capt. J. S. Bawa	- Master
Shri Gurdeep Singh	- Chief Officer
Shri A. Kumar	- Second Officer
Shri R.V. Iyer	- Third Officer
Shri J.A. Coutinho	- Fourth Officer
Shri B.S. Kher	- Chief Radio Officer
Shri R.S. Patil	- Radio Officer
Dr. Harish K. Jumani	- Medical Officer
Shri I.E. Fernandes	- Purser
Shri K.G. Krishnan	- Chief Engineer
Shri R.V.B. Nair	- Second Engineer
Shri R.K. Diwakar	- Third Engineer
Shri Anupam Kumar	- Fourth Engineer
Shri S. Ravi	- Fifth Engineer
Shri P.S. Dhillon	- Electrical Officer
Shri P.R. Nair	- Electrical Officer
Shri A.D. Carneiro	- Catering Officer
Shri G. Bhaskaran	- Deck Serang

4. OBJECTIVES

The objective of this cruise was to check the working and efficiency of the underwater electric rock core drill and to collect box cores.

5. CRUISE DETAILS

Ship sailed out from Mormugao Harbour on 26th November, 1986 at 1715 hours. The areas of operation in broader outlines were selected on the basis of the records and the results of the previous cruises in general and Cruise 158 of R.V. Gaveshani in particular. However, to identify the actual site for underwater rock core drilling, the side scan sonar and bathymetric surveys were undertaken at the following two sites.

Site I - $15^{\circ}56'$ - $16^{\circ}03'N$ and $72^{\circ}47.5'$ - $72^{\circ}58.5'W$

Site II - $14^{\circ}48'$ - $14^{\circ}56'N$ and $73^{\circ}23'$ - $72^{\circ}33'W$

This approach helped in identifying the micro-topographic details and occurrence of the rock out crops with the help of available position fixing system. To confirm these factors a corer/grab was first operated. At the first site the corer did not pick up any sample while at the second site some sand sample could be collected by

the grabs. Both these operations fulfilled the requirement of the hard bed for the operation of the underwater rock core drill. Subsequently, the drill assembly was lowered at the first site i.e. off Vengurla where the depth was 69 m. The drill was run for a period of over 5 minutes but stopped because: i) the extension indicator counter did not display readings of penetration and ii) the wire rope of the winch came out from the central wheel (i.e. up in the boom).

The winch wire was put back in the central wheel and the rock core drill retrieved. The core barrel was bent and the rectification of it took quite some time. The rock core drill was reassembled and lowered again at the same site.

Similar to the operation at first site, before the drilling, at second site i.e. off Karwar, the bathymetric and side scan sonar operations were carried out and each site rock core drill was operated twice.

6. DESCRIPTION OF THE UNDERWATER ELECTRIC ROCK CORE DRILLING SYSTEM

The underwater electric rock core drilling system is a bed rock sampling tool which has an aluminium structure designed to support drilling and sensor systems. All the functions of the drill are controlled from the

vessel with the help of the sensor system. The components of the system are:

- a) Underwater drill rig
- b) Umbilical cable
- c) Sensor systems
- d) Surface controller
- e) Handling line

7. PERFORMANCE ANALYSIS

The performance of the system was satisfactory except for the malfunctioning of the indicators of the surface controller. The display indicator for flushing pressure was not working due to the fault in the circuit of bottom electronics. There was a constant tripping of the motor whenever the safety device i.e. ground fault detector was connected. Hence the same was removed from the main circuit. Moreover, the connector at the drill end was also reconnected as the same was burnt out.

The non-availability of a 50 amp power supply in the Dry Laboratory (starboard side) also effected the operation of the drill. Hence, it is, recommended that a power plug of 50 amp may be provided in that laboratory, as this place is convenient for the operation of drill.

8. LOSSES/DAMAGES

There was no losses in the cruise except the bending of the coring pipe of the rock core drill.

9. ACKNOWLEDGEMENTS

We are thankful to all those who helped us directly or indirectly in successful completion of the cruise.

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O.R.V. Sagar Kanya
Cruise 27-B

TABLE - I
SHIPBOARD DESCRIPTION OF SAMPLES

Date	Time	Station No.	Position	Depth (m)	Type of Sampler	Length of core (cms)	Description of samples
28.11.86	1840-1620	SK 27B/1	15°59' 31"N-72°32' 41"E °	69	Box corer		No. sample obtained
28.11.86	1830-2000	SK 27B/2	15°59' 35"N-72°57' 56"E	69	Rock core drill	23.5	Coralline/Algal lime stones
29.11.86	0835-0900	SK 27B/3	15°59' 1"N-72°51' 75"E °	80	Grab	-	Dark olive green sand
29.11.86	2115-2250	SK 27B/4	15°58' 05"N-72°52' 88"E °	73	Rock core drill	3.0	Coralline/Algal limestone
1.12.86	0735-0741	SK 27B/5	14°54' 34"N-72°28' 81"E °	72	Grab	-	Olive green sand
1.12.86	0945-1030	SK 27B/6	14°54' 15"N-73°28' 69"E °	76	Rock core drill	6.5	Calcareous sandstone
1.12.86	2100-2315	SK 27B/7	14°54' 32"N-73°28' 79"N °	72	Rock core drill	-	No sample obtained
2.12.86	0930-0945	SK 27B/8	14°49' 43"N-75°59' 37"E °	22	Box corer	480	Clay with sand patches
2.12.86	1820-1830	SK 27B/9	15°59' 23"N-73°23' 79"E °	22	Box corer	616	Uniformly clay with patches of shelly