

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

CRUISE No. 15

24th May to 1st June, 1985



**National Institute of Oceanography
Dona Paula-403 004, Goa
INDIA**

NATIONAL INSTITUTE OF OCEANOGRAPHY
(Council of Scientific & Industrial Research)
Dona Paula- 403 004, Goa

Report on
15TH OCEANOGRAPHIC CRUISE OF
O.R.V. SAGAR KANYA

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O.R.V. SAGAR KANYA

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1.0 PARTICIPANTS

G.C. Bhattacharya	-	Chief Scientist
M.V. Ramana)	
V. Ramaswamy)	
N.P.C. Reddy)	
B. Chakraborty)	
E. Desa)	
S.K. Nanyasi)	National Institute of
B. Ramalingeswara Rao)	Oceanography
K. Srinivas)	
P. Ganesan)	
V.D. Khedekar)	
D. Gracias)	
B. Umamaheswara Rao)	
T. Pankajakshan)	
G.K. Suchindan	-	Centre for Earth Science Studies, Trivandrum

2.0 SHIP'S COMPLEMENT

Capt. J.A. Antao	- Master
A. Banerjee	- Chief Officer
A.M. Dube	- Second Officer
A.K. Mehta	- Third Officer
J.A. Coutinho	- Fourth Officer
P.P.S. Brar	- Chief Engineer Officer
Sanjeet Singh	- Second Engineer Officer
R.K. Talwar	- Third Engineer Officer
M.C. Monli	- Fourth Engineer Officer
R.S. Samraj	- Fifth Engineer Officer
G.S. Rai	- Electrical Officer
A.V. Ramadasan	- Electrical Officer
J.J. D'Souza	- Chief Radio Officer
M.B. Das	- Radio Officer
Dr. S.K. Roy	- Medical Officer
K. Sethumadhavan	- Purser
H. Pereira	- Catering Officer

3.0 SUMMARY

The cruise was primarily devoted to the studies of the continental shelf area off Saurashtra Peninsula. A total of about 2089 lkms of echosounding and magnetic field measurements were carried out during this cruise. The water depth varied from 45 metres in the nearshore areas to about 2400 metres towards the offshore end of the lines. A preliminary study of the bathymetric data indicate that the continental shelf is characterised by smooth topography except for an approximately N-S trending zone (about 60 kms wide) in the midshelf area having uneven seabottom. The slope is characterised by the presence of several high relief features. The nearshore areas (30 metres to 80 metres isobath) is characterised by long wavelength low amplitude anomalies whereas the rest of the area is relatively magnetically smooth.

4.0 INTRODUCTION

4.1 Background

The cruise was originally planned to carry out detailed bathymetric and gravity surveys between Ratnagiri and Karwar (a work requested by the ONGC). However, due to malfunctioning of the onboard Gravimeter this work was decided to be deferred to a later date and as an alternate arrangement a

short cruise was planned on the continental margin off Saurashtra with the main aim of collecting bathymetric and magnetic data.

4.1.1. Underway data collection

As a part of the programme for systematic geological and geophysical surveys of the continental margin of India, large areas of Saurashtra continental shelf upto Veraval was surveyed during earlier cruises of the Institute's research vessels. The present cruise was planned to extend this coverage on the continental shelf and slope, south of Veraval.

4.2 Quantum of work

During the cruise, following data were collected:

- | | |
|------------------|----------|
| (a) Echosounding | 2089 lkm |
| (b) Magnetics | 2089 lkm |

4.3 Itinerary

Dep: Mormugao	24.05.1985
Arr: Mormugao	01.06.1985

5.0 RESULTS OF THE SURVEY

5.1 Position fixing and data processing

The positions during the cruise were obtained by integrated Satellite Navigator System with the HP 2117 computer. The compu-

ter integrates the data from the Satellite Navigator System, gyro, doppler sonar and other associated navigation sensors. In addition, the computer also integrates the data collected by echosounder, magnetometer and gravimeter.

Navigational, bathymetric and magnetic data recorded by the Integrated Navigation System were processed by the onboard HP-1000 multipurpose computer using the available processing routines. The data processing involves the correction of dead reckoning positions using the satellite updates. From the corrected positions, the cruise tracks were plotted on mercator charts (1:300,000 scale).

5.2 Echosounding

During the cruise a Honeywell Elac Narrow beam echosounder (12 KHz frequency) was used for collection of bathymetric data. The continental shelf is mainly smooth. In the midshelf, a zone (approximately N-S trending) with about 60 kilometres width is however conspicuous with its relatively uneven bottom topography. The slope is relatively steep but high relief features are present on the slope.

5.3 Magnetics

Earth's total magnetic field intensity values was measured along the tracks using a Geometrics Proton Precession Magnetometer (model G 801/3). The sensor was towed about 250 metres astern of the vessel. The data were recorded continuously on a

strip chart record with sampling interval of 6 seconds and the monitor readings were recorded every 10 minutes.

It was observed that the inner shelf areas (30 metres to 80 metres isobath) is characterised by long wavelength low amplitude anomalies whereas in the rest of the area the magnetic signature is relatively smooth.

5.4 Seabed Sampling

Seabed sample was collected at one location using a deep sea grab and calcareous ooze type sample was collected.

5.5 Testing of acoustic navigation system

During the first cruise of GA REAY three moorings with sediment traps and acoustic release transponders were deployed off the western continental shelf and slope off Goa on 4th and 5th May, 1985.

In order to keep a check on the moorings the Acoustic Navigation System was installed onboard ORV Sagar Kanya and all the three moorings were interrogated. The transponders were interrogated while proceeding from Mormugao to the survey area (on 24th May, 1985) but proper response were not obtained due to some electronic fault in the Acoustic Navigation System. This fault was rectified onboard the cruise and all the three transponders were interrogated successfully during the return journey (on 1st June, 1985). On completion of the interrogation session

all the transponders were kept 'disabled' to conserve the batteries and to prevent accidental release.

6.0 ACKNOWLEDGEMENTS

The Chief Scientist and all the members of the scientific team would like to express their thanks to Capt. J.A. Antao, Master and other officers and crew members of ORV Sagar Kanya for their continued help for successful completion of the cruise.

ORV SAGAR KANYA CRUISE - 15

A. Details of stations occupied for interrogation of transponder attached to sediment trap moorings.

Date	Station No.	Co-ordinates		Water Depth(m)
		Lat.(N)	Long(E)	
24.05.1985 &1.06.1985	1	14°56.357'	73°00.510'	230
24.05.1985 &1.06.1985	2	15°10.572'	73°07.877'	108
24.05.1985 &1.06.1985	3	15°08.918'	73°30.724'	59

B. Details of sampling station

Date	Station No.	Co-ordinates		Water Depth (m)	Equip-ment used	Descrip-tion of sample
		Lat(N)	Long(E)			
27.05.85	1	19°41.9'	69°03.0'	2552	Deep Sea Grab	Calcar-eous ooze

ORV SAGAR KANYA CRUISE - 15

UNDERWAY DATA TYPE: BATHYMETRY

SHIP CODE : (04)

CRUISE CODE : (0015)

Line No.	START OF RECORD			END OF RECORD			ROLL No.	REMARKS
	Date (GMT)	Time (GMT)	Fix	Date (GMT)	Time (GMT)	Fix		
Line 4	25.5.85	0600		26.5.85	1900		1	
Line 5	26.5.85	1930		27.5.85	0330		1	
Line 6	27.5.85	1330		27.5.85	2030		1	
Line 8	27.5.85	2130		28.5.85	0500		1	
Line10	28.5.85	0700		28.5.85	1500		1	
Line12	28.5.85	1630		29.5.85	0230		1	
Line14	29.5.85	0400		29.5.85	1430		1	
Line15	29.5.85	1445		30.5.85	1400		1	

UNDERWAY DATA TYPE: MAGNETICS

SHIP CODE : (04)

CRUISE CODE : (0015)

Line No.	START OF RECORD			END OF RECORD			ROLL NO.	Remarks
	Date (GMT)	Time (GMT)	Fix	Date (GMT)	Time (GMT)	Fix		
Line 4	25.5.85	0930		26.5.85	1730		1	
Line 4	26.5.85	1800		26.5.85	1900		2	
contd.								
Line 5	26.5.85	1930		27.5.85	0330		2	
Line 6	27.5.85	1330		27.5.85	2030		2	
Line 8	27.5.85	2130		28.5.85	0530		2	
Line10	28.5.85	0630		28.5.85	1500		2	
Line12	28.5.85	1615		28.5.85	1330		3	
contd. Line12	29.5.85	0015		29.5.85	0245		3	
Line14	29.5.85	0400		29.5.85	1445		3	
Line15	29.5.85	1500		30.5.85	1400		3	

