

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

**CRUISE No. 13—A**

8th to 14th February, 1985



**National Institute of Oceanography  
Dona Paula-403 004, Goa  
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NATIONAL INSTITUTE OF OCEANOGRAPHY  
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REPORT ON  
13A OCEANOGRAPHIC CRUISE OF  
O.R.V. SAGAR KANYA

(8 to 14 February, 1985)

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O.R.V. SAGARKANYA

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1. CRUISE SUMMARY

The Cruise 13A of ORV Sagar Kenya was undertaken from 8th to 14th February, 1985 covering the continental shelf off the Gulf of Kutch. This field investigation was carried out for the proposed 500 MW Tidal Power Project to be built in Gulf of Kutch. During this cruise seven instrumented mooring systems were deployed in pre-defined locations. Three instrumented mooring systems out of the seven, were equipped for the time series recording of water levels and current data, while the remaining four were equipped for the time series recording of water levels only. The mooring deployment operation was done to the full satisfaction of the participants without any damages or losses of equipment.

2. PARTICIPANTS

B.U. Nayak	-	Chief Scientist
P. Chandramohan	)	
A.K. Suryavanshi	)	
K. Ashokkumar	)	Ocean Engineering Division
P. Pednekar	)	
H.C. Mandal	)	
V. Ramesh Babu	)	Physical Oceanography
V.V. Gopalkrishna	)	Division
Y. Sachuram	)	
K. Santanam	)	
D. Panakala Rao	)	
V.S.N. Murthy	)	
N.S. Prabhu	)	Marine Corrosion & Biofouling
V.M. Dhople	)	Division
Aditi Pant	-	Biological Oceanography
		Division
A.P. Selvam	-	Marine Instrumentation &
		Computer Division
D.P. Gokhale	)	
M.A. Ketkar	)	
V.V. Vaze	)	Central Water & Power Research
P.B. Kulkarni	)	Station, Pune
A.G. Sathe	)	
B.S. Kamble	)	
D.T. Makashir	)	
H.R. Sarma	)	Central Electricity Authority,
Devasahayam	)	New Delhi

2. SHIP'S COMPLEMENT

J.A. Antao	- Master
Aroop Banerjee	- Chief Officer
A.M. Dube	- Second Officer
S. S.L. Dabhoya	- Third Officer
V.N. Singh	- Chief Engineer
Sanjeet Singh	- Second Engineer
G.S. Rai	- Electrical Officer
M.B. Das	- Radio Officer
R.P. Sequeira	- Chief Steward
K. Sethumadhavan	- Purser

#### 4. OBJECTIVES & ORIGINAL CRUISE PLAN

The Cruise 13A of ORV Sagar Kenya was planned for the comprehensive study of tidal levels and currents at the edge of the continental shelf off the Gulf of Kutch (Refer Fig. 1 for cruise track). This field investigation was for the proposed 600 MW tidal power project in the Gulf of Kutch. The proposed construction of a tidal barrier across the Hansthal Creek is likely to affect the tidal levels amongst the other oceanographic parameters. In order to study the effect of this barrier on the tidal levels, a mathematical model has been developed at Central Water and Power Research Station, Pune. These water levels and current data observed at the edge of the continental shelf off the Gulf of Kutch forms the input data for this mathematical model. (Refer Fig. 2 for the boundary of this mathematical model and location of stations for data collection). In order to collect these data on currents and water levels, instrumented sub-surface moorings at seven pre-defined locations were deployed during this cruise. A tentative plan was made to retrieve these instrumented moorings during the 3rd week of March 1985.

#### 5. CRUISE DETAILS

ORV Sagar Kenya sailed at 1800 hrs on 8th February 1985 from Mormugao Port. The first station arrived at 1430 hrs on 11th February 1985. After deploying instrumented mooring at

seven pre-defined locations the vessel returned to Port Okha at 0830 hrs on 14th February 1985 (Refer Fig. 1 and Fig. 2 for cruise track and station details).

Mooring preparatory works such as assembling of hardware and miscellaneous instrumental pre-deployment routine checks were carried out on ships main deck on 9th and 10th February 1985, prior to the arrival of the first location.

All the instrumented moorings deployed were sub-surface type with a pair of Sonardyne acoustic transponding release devices at the bottom of the mooring system. A 70 m diameter steel sub-surface buoy of 100 kg buoyancy was connected at the top end of the mooring to make the line below it taut. A pressure release type of radio beacon was mounted on this sub-surface float. Three mooring systems out of seven were equipped for the time series recording of water levels and currents. The remaining four mooring systems were equipped for the time series recording of tidal levels only. Both currentmeters and tide gauges used were of Aanderaa make in-situ self recording type. Reinforced concrete blocks were used as dead weight anchors at the bottom of the mooring system. (Refer Fig. 3 for a schematic view of a mooring system with a tide gauge and a Currentmeter).

All the instrumented moorings were deployed from the starboard side of the vessel with anchor first method. After



deploying the mooring system the exact depth and positions were noted. (Refer Table 1 for the exact position and depth of deployment).

Table 1 shows the positions and parameters measured at different stations. The tide gauge were set for recording the water levels at a regular interval of 1 hour. The current meters were set for recording the current and other oceanographic data at a regular interval of 10 minutes. Surface current measurement upto 10 m depths were also carried out at station No. 1, 4 and 6 after the deployment operation. A direct reading currentmeter (Sonardyne make) was used for this purpose.

#### 5. PERFORMANCE ANALYSIS

The deployment operation of seven instrumented moorings was carried out as per the planned schedule. The deck handling facilities on board ORV Sagar Kanva were utilised efficiently for deployment of instrumented moorings without causing any damage or loss of equipment.

#### 7. LOSSES/DAMAGES

No equipment was damaged or lost during the cruise.

8. ACKNOWLEDGEMENT

The Chief Scientist and other scientists acknowledge with thanks the services given by Master, officers and crew of ORV Sagar Kanya during this cruise.

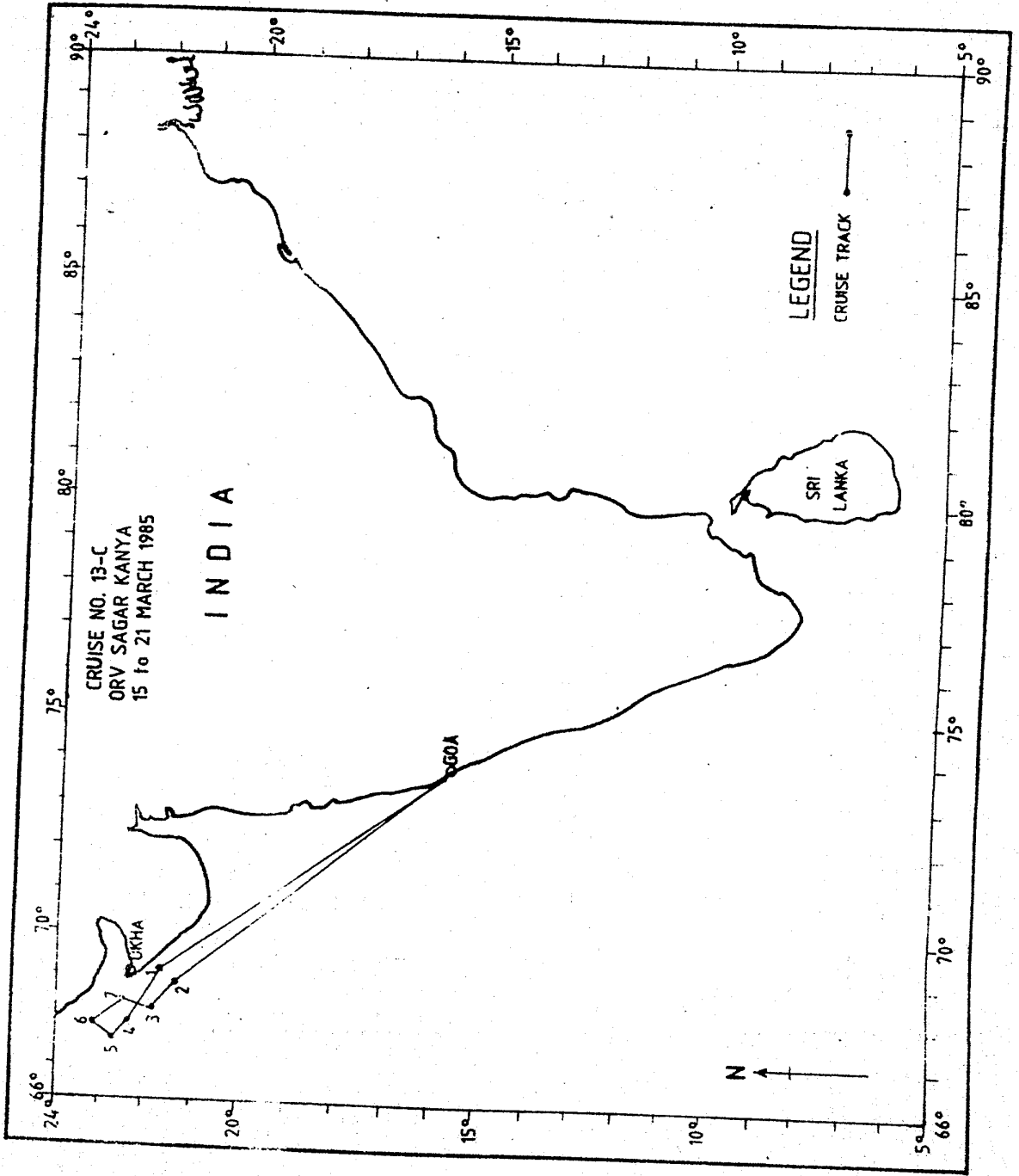


FIG. 1

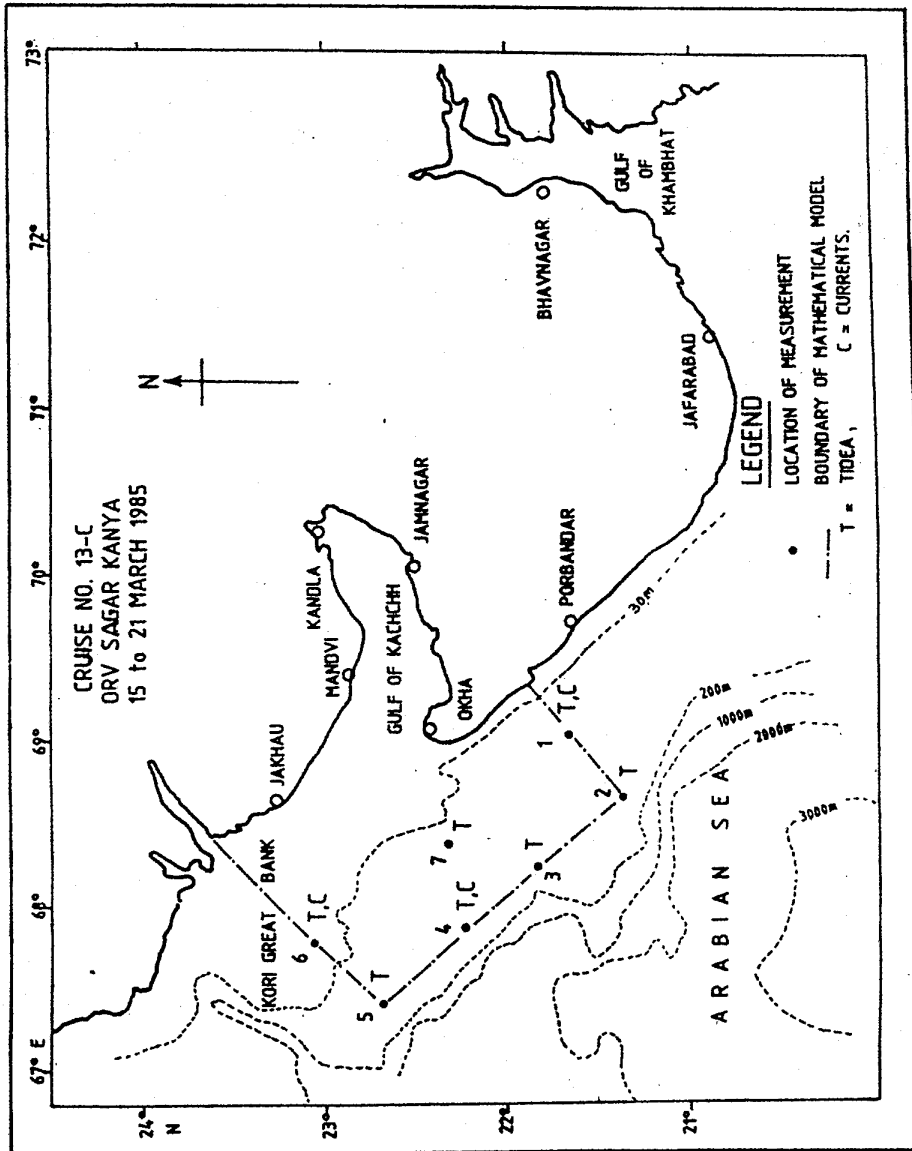


FIG. 2

CRUISE NO. 13-C  
ORV SAGAR KANYA  
15 to 21 MARCH 1985

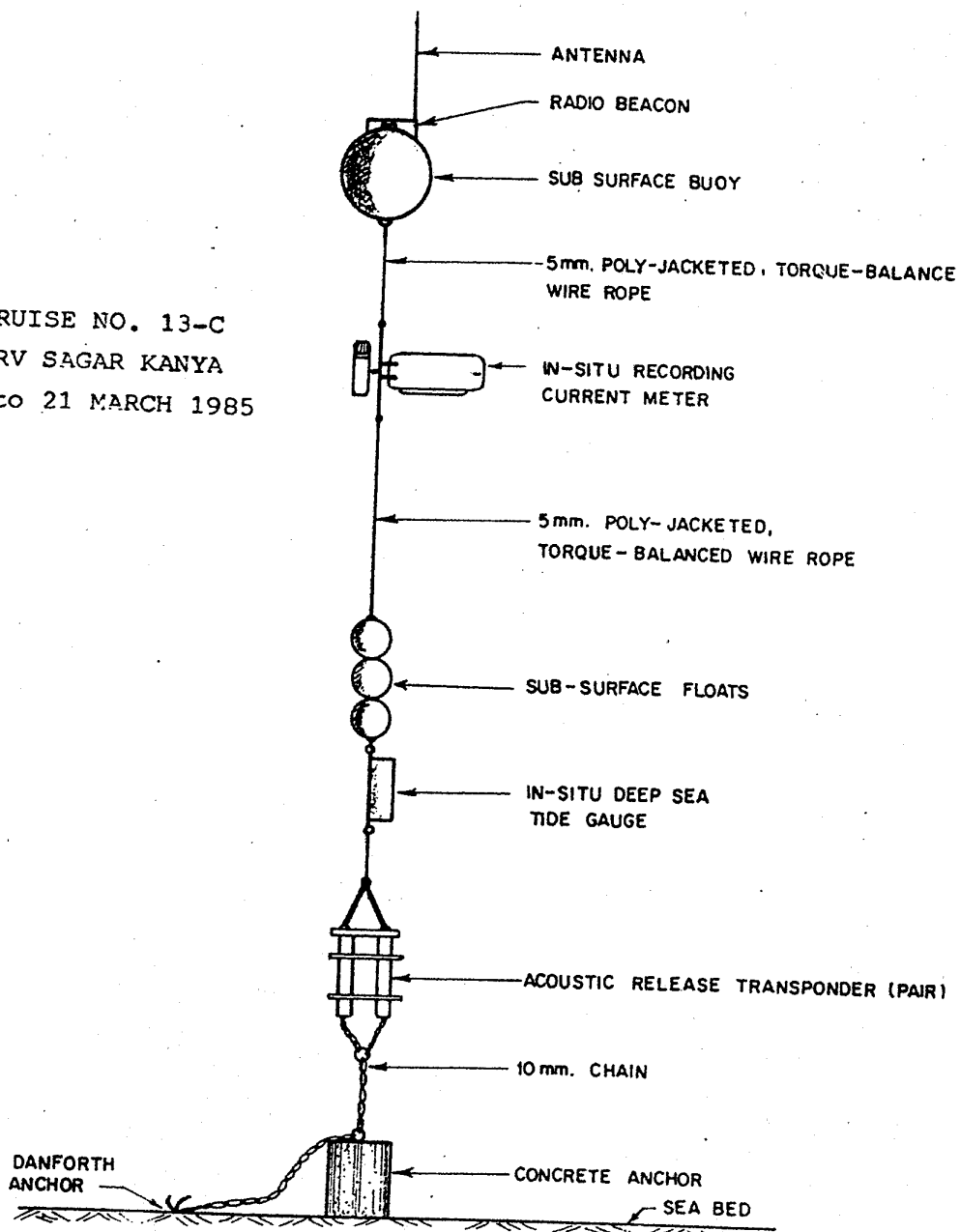


FIG. 3 A TYPICAL SUB-SURFACE MOORING .

Table.1 SUMMARY OF THE STATIONS.

Ship- O. R. V. SAGAR KANYA  
Cruise No. 13A

Sl. No.	Station No.	Latitude (North)	Longitude (East)	Depth (m)	Parameters Measured	Date	DEPLOYMENT Time ( I.S.T. )
1	1	21° 40 . 37'	69° 0 . 04'	50	Tides & Currents	11-2-85	1430 hr
2	2	21° 22 . 80'	68° 40 . 20'	100	Tides	11-2-85	1900 hr
3	3	21° 48 . 70'	68° 13 . 35'	99	Tides	12-2-85	0815 hr
4	4	22° 14 . 60'	67° 49 . 10'	100	Tides & Currents	12-2-85	1230 hr
5	5	22° 42 . 50'	67° 22 . 60'	105	Tides	12-2-85	1900 hr
6	6	23° 2 . 80'	67° 45 . 90'	22	Tides & Currents	13-2-85	0830 hr
7	7	22° 22 . 00'	68° 21 . 00'	60	Tides	13-2-85	1730 hr