

SCIENTIFIC REPORT OF  
INDIAN EXPEDITION TO WEDDELL SEA

# SCIENTIFIC REPORT OF INDIAN EXPEDITION TO WEDDELL SEA

TECHNICAL PUBLICATION NO. 7



सत्यमेव जयते

DEPARTMENT OF OCEAN DEVELOPMENT  
CGO COMPLEX, LODI ROAD  
NEW DELHI 110 003  
INDIA

1995

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N.H. 5P, N.I.T., Faridabad

*Printed at:* Publications & Information Directorate  
Dr K.S. Krishnan Marg, New Delhi-110012

## FOREWORD

The Indian Weddell Sea Expedition during the austral summer of 1989-90, added a new dimension to Indian endeavours in Antarctica by extending our opportunity base for scientific researches to one of the most spectacular parts of the Icy Continent.

The findings and experiences of expedition members, described in this report would, I am sure, spur more imaginative endeavours designed to unravel the structure of this forbiddingly aloof continent and its governance of the planetary environment.

VINOD K. GAUR

*Distinguished Scientist*

Council of Scientific & Industrial Research

National Aeronautical Laboratory,

Bangalore

## PREFACE

The Indian Antarctic Study Group, in its meeting held on 20.3.89, expressed a view that time had come for enlarging the scope of geoscientific activities by the Indian teams in Antarctica. The Committee recommended that other areas of this continent should be reconnoitred for selecting a site for the establishment of a new station which could be utilized by the Indian scientists for extending their activities. Department of Ocean Development, the nodal Agency of the Govt, of India for Antarctic Study Programme, consequently decided to launch a separate expedition to the Weddell Sea area of Antarctica—First Weddell Sea Expedition during the 1989-90 season; at the same time continuing the activities in the Dakshin Gangotri-Maitri area of the Dronning Maud Land which would be the responsibility of the routine (9th) expedition.

The First Weddell Sea Expedition was given the following tasks:

1. Reconnaissance of the onshore area between the longitudes 20°W and 45°W, along the southern limits of the Weddell Sea, to select a site for a permanent station, preferably at and around the Berkner Island.
2. To carry out preliminary geoscientific activities in this area.
3. If possible, take an inland traverse further south, as far as possible, to identify safe routes which could be used by the future working teams.

A 21 member team led by the undersigned, comprising members from the various geoscientific organisations and Defence Forces was selected, to undertake the said expedition for which a small ice breaker, Polarbjorn - A Norwegian Ship - was chartered (Fig. 1).



*Fig.1. Polarbjorn—A Norwegian Ship chartered for 1st Weddell Sea Expedition.*

## Team

1.	V.K. Raina (Leader), Geologist/Glaciologist	:	Geological Survey of India
2.	S. Mukerji, Geologist/Glaciologist	:	-do-
3.	A.S. Gill, Geologist/Glaciologist	:	-do-
4.	V. Divakar Rao, Geologist	:	National Geophysical Research Institute
5.	S.C. Jain, Geophysicist	:	-do-
6.	P. Dotiwala, Geologist	:	Oil & Natural Gas Commission
7.	Col. R.G. Wastrad (Engineer)	:	Defence Research and Development Organisation
8.	Lt. Col. G.S. Rawat (Doctor)	:	Indian Army (AMC)
9.	Major Ram Kumar (Engineer)	:	-do - (EME)
10.	Cdr. P. Dixit (Pilot)	:	Indian Navy
11.	Lt. Cdr. S. Pillai, (Pilot)	:	-do-
12.	Lt. Cdr. D. Kumar, Meteorologist	:	-do-
13.	Lt. Cdr. M. Ravindran, Engineer	:	-do-
14.	Lt. A. Gupta, Pilot	:	-do-
15.	Lt. P.M. Mathews, Communication Engineer	:	-do-
16.	Lt. S. Midha, Pilot	:	-do-
17.	P.V. Thomas, Technician	:	-do-
18.	Kalika, Technician	:	-do-
19.	A. Alam, Technician	:	-do-
20.	V. Kumaran, Technician	:	-do-
21.	J.R. Gorla, Technician	:	-do-

## Route

The team left Goa on 4th December and after crossing the equator on 8th December arrived at Mauritius on the morning of the 13th December 1989 having covered a distance of about 4000 km. After a day's halt for refuelling, the team departed for Weddell Sea in the evening of 13th. To avoid a series of cyclonic storms — low pressure areas — in 40° and 50° south latitudes, the Ship made a detour and proceeded south-ward along 30°E longitude upto 60°S latitude, from where a westward course, almost parallel to Antarctic continent, was taken upto 20°W, arriving in the domain of the Weddell Sea on 27th December, 1989 (Fig. 2). Taking the advantage of an open sea lead, extending southwestward, the Ship arrived at Pilchner Shelf toward the end of December, 1989.



*Fig.4. Belgrano-II (Argentinian Station) on Bertrab Nunatak, Weddell Sea.*



*Fig.5. Halley-IV, British Antarctic Station, Weddell Sea.*

The team spent a period of 40 days in the Weddell Sea sector of Antarctica during which a considerable area of the Filchner ice shelf, Berkner Island and Luitpold coast was reconnoitred and Field Camps and Fuel dumps established (Fig. 3). Geological examination of Littlewood, Bertrab and Moltke Nunataks was carried out. In the case of latter the team had to be retrieved with the help of a rope ladder lowered from a helicopter, hovering above, a masterful exhibition of flying and co-ordination with field team.

The team during their stay in the Weddell Sea had the opportunity to visit the Argentinian Station — Belgrano II (Fig. 4) and the British Antarctic Station at Halley Bay (Fig. 5) and exchange visits and gifts with the persons stationed there. The team also had the opportunity of exchanging visits with the Research Vessels — icebreakers, Polar Stern (German Research Vessel); Almirante Irizar (Argentinian icebreaker) and RR Bransfield—British Ship.

The return journey was relatively uneventful from the weather point of view but the team had to spend more than a week at Mauritius due to unavoidable circumstances.

### Acknowledgements

The leader and the other members of the team would like to convey their gratitude to Prof. M.G.K. Menon, the then Minister of State for Science & Technology & Ocean Development, for the encouragement and keen interest shown in the activities of the expedition. To Prof. V.K. Gaur, Secretary to the Govt. of India, Department of Ocean Development, we are thankful for the continuous guidance and the motivation created in the team for the successful execution of the job. Thanks are also due to Chiefs of the Naval Staff and the Army Staff for the logistic support; the Director General, Geological Survey of India, Director, NGRI and Chief of KDMPI for the scientific and technical support given. Thanks are also due to Shri G.B. Mukherjee, Director, Deptt. of Ocean Development, Director, NIO & other officials of DOD and NIO for their support at the time of departure and arrival of the team at Goa.

We would also like to express our gratitude and thanks to:

1. Members including the Pilots of the German Station — Filchner -- and the officers, crew and the scientific members of the German Research Vessel, Polar Stern, especially the Doctors and Nurses who looked after one of our members during his post operational convalescence and subsequent evacuation to India.
2. Gen. Jorge Leol, Director, National Del Antarctica, Argentina, who was on a visit to Belgrano II and was kind enough to invite us for a visit and personally took us round the station.
3. Officers and crew of the Argentinian Icebreaker, Almirante Irizar for decorating their Ship on 26th January 1990, the Indian Republic Day and for accepting our invitation to participate in the celebration of the same on board our Ship.
4. Members of the British Antarctic Station — Halley Bay for taking us round their station — Halley IV as well as the Halley V now under construction.
5. To the officers and crew of the RR Bransfield, the British Ship for exchange of visit.



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The Leader would like, through the pages of this report, to express his deep gratitude to the various members of the team, both scientists and defence personnel for the dedication and the devotion to duty exhibited by them for success of the expedition.

Calcutta

V.K. RAINA

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