

MANPOWER

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As one famous oceanographer said "An expedition needs an idea, scientists who are interested in it, a ship capable of work and money. Bringing them together takes a lot of talking, adjustment, writing, modification, time flexibility, and work". This section deals with the recruitment, training and deployment of manpower.

A) RECRUITMENT

At the initial stages i.e. during 1980-81 there were only nine experts (four geologists, one geophysicist, two marine surveyors, one mechanical engineer and one electronic engineer) working on the project. The first polymetallic nodule cruise was undertaken by this small group with the assistance from other disciplines like biology, chemistry and physical oceanography. With the acceleration of the project, the Institute augmented the manpower for exploration. This included creation of new posts in scientific, technical and administrative categories and filling up of the vacant posts.

During 1982-83, the major thrust of the programme was for surveys to demarcate the prime area for polymetallic nodules in the Central Indian Ocean. The exploration was planned to be carried out by "R.V. Gaveshani" along with a chartered vessel, which meant that additional manpower was necessary to carry out surveys simultaneously by two ships. The C.S.I.R. with the assistance of D.O.D in 1982 created new posts of 50 scientists and 50 technicians in various disciplines of oceanography (Appendix I).

B) TRAINING

These 50 scientists and 50 technicians underwent rigorous inhouse theoretical and practical training for six months which included participation onboard the vessel.

During the exploration programme sophisticated instruments arrived for surveys. Among the new equipment purchased were the Raytheon echosounder, Magnavox MARYSAT communication system, satellite navigation system, ATNAV system, boomerang cameras and rock core drill. These equipment required trained personnel for their proper handling and use. The Institute therefore decided to train the existing staff abroad in the operation and maintenance of these new equipment.

The training abroad was broadly divided into three types viz, A) training for a specific equipment B) training by participation in foreign research vessels and C) training by collaboration with foreign countries. Twenty seven scientists and technicians have been trained abroad and many more will be trained further with the acquisition of new equipment. A broad split up of training the personnel in the project is as follows :

Year	Country	Ship/Equipment	No. of scientists/technicians.
1981	UK	Geodetic positioning and acoustic navigation	1
1982	FRG	C.D.G programme for ORV Sagar Kanya.	5
1983	USA	Raytheon Echo-sounder	1
	Singapore	RV Sonne	2
	FRG	ORV Sagar Kanya	4
	FRG/MALTA	ORV Sagar Kanya	7
	MALTA	ORV Sagar Kanya	2
	Singapore & Mauritius	RV Sonne	4
	FRG	Operation and maintenance of air gun and compressor.	1

FROM THE FIRST NODULE TO THE FIRST MINE SITE

Year	Country	Ship/Equipment	No. of scientists/technicians
	USA	ATNAV	4
	USA	Benthos Under water camera	2
	FRG	Preussag Boomerang camera.	2
	FRG	Seismic system	2
	FRG	Echosounder	2
	FRG	Magnetometer	1
	France	Electron microprobe	2
1985	Canada	Rock core drill	2
	Norway	Geological/geological mapping system.	1
1986	Djibouti	RV Sonne	3
	Mauritius	RV Sonne	4
	Norway	GECO mapping system	1
1987	Madagascar	IOC Programme of training in Bathymetry	1
	USA	Studies on phosphorite	1
	Norway	NORAD programme for seismic data processing	2

geologists, 4 technical assistants for geology, six geophysicists, 6 electronic engineers, 15 electronic technical assistants, 5 mechanical technical assistants and 13 surveyors. In addition, 4 outside organisations and 3 universities provided limited inputs for the shipboard work.

In 1984-85, 12 R & D organisations and 14 universities/colleges participated in the exploration programme of the project. The team during this year was the same as in 1982-83 with one additional geophysicist and 4 technical assistants in various disciplines. There were 17 participants from other organisations, the majority were from the IMD and NGRI.

The manpower, inhouse as well as the outside participants, remained unchanged in 1985-86, whereas in 1986-87, there were 14 participants from the other organisations and the NIO team was reduced to 58 due to change of job of the scientists and technicians. During this year there were only 8 participants from other organisations with majority from the Govt. Polytechnic, Panjim (Goa).

The year-wise split up of the manpower deployed by the NIO, other CSIR laboratories, educational institutes, government survey departments and R & D agencies is graphically represented in Fig. 40 and names listed in Appendix II.

Effective future development of the project mainly depends upon the strength of the working team having adequate knowledge and skills to plan and manage the development. The resources of the sea and the related technological activities represent a challenge. Such activities, therefore, require careful management at the national level for the utilisation of ocean resources.

C) DEPLOYMENT OF MANPOWER YEAR-WISE

The team of 76 persons for the polymetallic nodules exploration programme during 1982-83 comprised 27

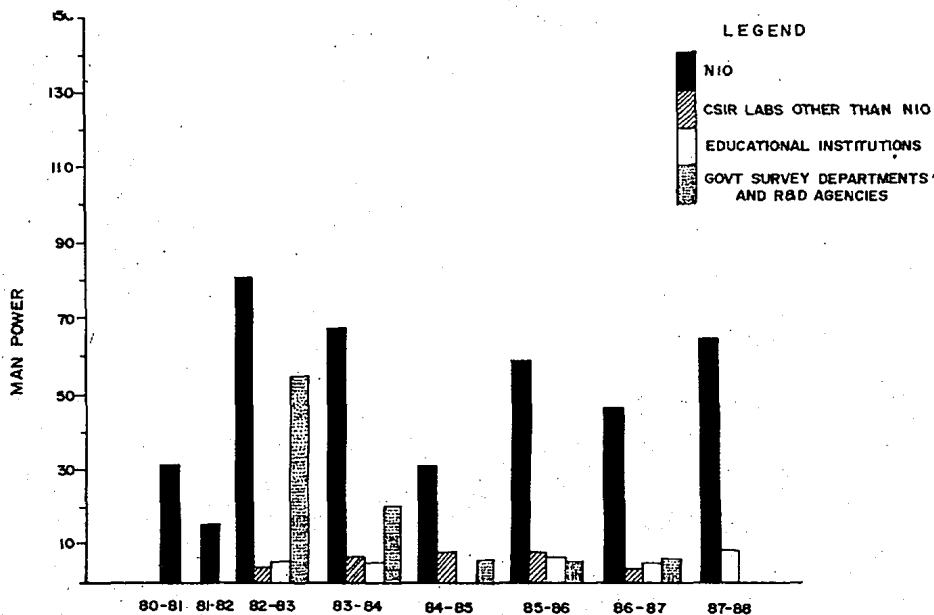


Fig. 40 Manpower deployment of participating organisations from 1980 to 1988.