

(d) if so, whether the decision is still valid ?

THE MINISTER OF STATE IN THE  
MINISTRY OF STEEL AND MINES  
(SHRI SHAHNAWAZ KHAN) (a) Yes  
Sir

(b) No, Sir

(c) and (d) Do not arise

#### Deposits of Minerals in Indian Ocean

4902 SHRI M SATYANARAYAN  
RAO Will the Minister of STEEL AND  
MINES be pleased to state

(a) whether Indian Oceanic survey  
ships with the help of Russian scientists,  
have discovered the presence of large de-  
posits of different minerals on the floor  
of the Indian Ocean and

(b) if so the particulars of the de-  
posits found there and the programme of  
prospecting them ?

THE MINISTER OF STATE IN THE  
MINISTRY OF STEEL AND MINES  
(SHRI SHAHNAWAZ KHAN) (a) and  
(b) Under the International Indian  
Ocean Expedition (1960-65), in which  
Indian Scientists from various institutions  
including Geological Survey of India also  
participated, Soviet ships surveyed exten-  
sive areas of Indian ocean leading to the  
discovery of Manganese nodules scattered  
over approximately 10 million square kilo-  
meters of abyssal areas of the ocean

Marine geological explorations are  
being conducted by the Geological Survey  
of India independently as part of their  
regular programme and this is not with  
the help from U S S R

Early studies by Geological Survey of  
India indicated the presence of barium  
nodules off the west coast and of phos-  
phatic nodules off the Andamans Recent  
studies by the Marine Geology Unit of  
the Geological Survey of India set up in

1965 have indicated about 16 crore tonnes  
of calcareous sands in two lagoons in the  
Laccadive Islands. A reconnaissance of the  
phosphatic occurrences off the Andamans  
has also been carried out

A programme for geological survey and  
exploration of the entire continental  
margin of the country has been prepared  
and it is proposed to collect data and sam-  
ples on cruise tracks totalling 26,000 km  
and traversing the entire continental margin  
of the country To expedite offshore mine-  
ral exploration, the Geological Survey of  
India has also a proposal to procure a ship  
especially designed for off shore mineral  
exploration from Indian shipyards during  
the 4th plan

#### Setting up of 'Operation Hardrock' Pro- ject with United States Collaboration

4903 SHRI INDRAJIT GUPTA  
SHRI JADEJA

Will the Minister of STEEL AND  
MINES be pleased to state

(a) whether a project called "Operation  
Hardrock" was undertaken a few years ago  
with U S collaboration

(b) whether its failure has necessitated  
the current French aided project for  
aerial survey for non-ferrous metals,  
and

(c) the extent, if any, to which the  
results of such expensive projects are actu-  
ally being exploited for the country's bene-  
fit?

THE MINISTER OF STATE IN THE  
MINISTRY OF STEEL AND MINES  
(SHRI SHAHNAWAZ KHAN) (a) Yes,  
Sir

(b) No, Sir The 'Operation Hardrock'  
was taken up with a view to have  
a multi-instrument airborne geophysical  
survey using electro magnetic, magnetic  
and spectrometer instruments over a