due to their chemical changes involved during hydration and devitrification of the lava The occurrence of perlite is rare in Precambrain rocks because of the antiquity since glass tends to be metastable and devitrify Occurrence of elongated or semicircular depression with steep slope at the top of the hill with volcanic flow products at Nakora is promoted to identify this as volcanic vent The Nakora volcanic vent is located along the Luni rift Luni rift (Narayan Das et al 1978) is an important tectonic lineament in the TAB which is related to major crustal dislocation of the continental rift type (Bailey, 1974) It is likely that the major fractures acted as a channel way for the magma extrusions and intrusions The recent geological field investigations in NRC have noticed that the trend of the Luni rift at Nakora takes sudden 'U' turn from west to south direction This indicates the Nakora volcanic vent is perhaps related to the rift dynamics and advocates a relationship between tectonism and volcanism It also suggests that the Luni rift served as channel for magma rising to the surface as flow at Nakora Similar type of volcanic vent related to rift are also reported in Ethiopia and Turkey respectively (Korme et al 1997, Dhont et al 1998, Toprak 1998) The steep dipping nature of the volcanic flow in the study area generally promoted by long lived lava propagation (Polacci and Papale, 1999) This present study promises to invoke to identify more central volcanic eruption system in the volcanic terrains of MIS

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VOLCANICS OF THE CENTRAL INDIAN OCEAN BASIN

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Extended Abstract

- Volcanism is a dominant process in the oceans and is directly related, amongst others, to the morpho-tectonic features, creation of new oceanic crust, crustal plate movements, formation of new rock types, ore mineral formation and hydrothermal activities Volcanic activity in the oceans is generally of two types: (1) central type

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eruptions confined to abyssal basins, giving rise commonly to tholeiitic and alkali basalts to form seamounts, (ii) low-K tholeiitic magma erupting along the MOR and fracture zones.

- Since 1982, the Central Indian Ocean Basin (CIOB) has been extensively and intensively investigated under the national project, "Surveys for Polymetallic Nodules" sponsored by the Department of Ocean Developments and the Council of Scientific and Industrial Research. The basin extends from 9°S to 20° S and 72°E to 84°E and the average water depth is 5100 m. The sole objective of the project is to identify a First Generation Mine Site within the basin and toward this end a number of cruises have been undertaken. During sampling for the ferromanganese deposits (nodules and crusts), the associated sediments and rocks have also been recovered. Since the priority of the project was for collection of ferromanganese deposits, there is a constraint on the amount of rocks recovered. Despite this, an attempt has been made to understand the volcanic history and type of rocks occurring in the CIOB. Before delving into the subject of volcanics, a general idea of the morphology and structural features of the basin is presented.
- *Morphology and Structural features:* The morpho-structures present are intrinsically related to the volcanic activities. There are large fracture zones, the Trace of the Triple junction on the Indian Plate (TJT-In), crenulations and propagative fractures. About 200 seamounts (height >100 m) occur either as isolated volcanoes or are arranged along eight parallel chains. The formation of these features is related to the episodes of plate re-organisation and variable rate of sea-floor spreading.
- The CIOB too has had it share of volcanic activities in the geological past because of which a variety of rocks have been recovered from the basin. These rocks include Normal-Mid-Ocean Ridge Basalts (N-MORB), Ferrobasalts (FeTi-rich), Spilites (Albitised basalts), Rhyolitic volcanics i.e., pumice and glass shards (transported either from the Indonesian Volcanic Arc [IVA], from the 75,000 year ago Toba eruption, from the 1883 Krakatoa eruption at Indonesia and/or formed through in situ eruptions), Volcanogenic - hydrothermal materials (Si-Fe enriched sediments and volcanic magnetite spherules derived from in situ events).
- The volcanics are invariably associated with the morpho-structures indicating that volcanic and tectonic activities complemented one another.
- For manganese nodules and crusts to grow, a nucleus is necessary which could either be a rock fragment, outcrop, older nodule, shark tooth, etc. The abundant volcanics in the CIOB have acted as potential nuclei for the manganese nodules and crusts. A close correspondence between the fields of siliceous sediments, volcanics and manganese nodules is noted.
- The constant interaction between basalts (glass and whole rock) with seawater has resulted in the alteration and formation of clay minerals, palagonite and zeolites (phillipsite). The authigenic minerals influence the geochemical cycle since they act as sources or sinks for various elements.
- Considering a multitude of parameters (volcanics, morpho-tectonics, sediment types, manganese nodule characteristics etc.) a model has been developed to explain the formation and abundance of nodule deposits in the CIOB.
- It is vital to know the distribution of rock outcrops in the CIOB because once mining for nodule commences the underwater collecting device has to be deftly maneuvered to better recover nodules, avoid damages and loss of collecting time.

R. Veena
1978-2007

We deeply regret to record the sudden and tragic death of Smt. R. Veena at the young age of 29 years. Veena joined the Society in April 2001 and within a short period picked up the work and endeared herself to everyone in the Society by her pleasing manners. One and all in the Society miss her and convery our deep sympathies to the bereaved.

S.V. SRIKANTIA