very often RIS sites are located in a stable region which has a very low natural seismicity. For example, at Koyna moderate size earthquakes have been occurring for the past 30 years in an area of some 25 km × 25 km. It is most desirable to take up detailed induced earthquake related studies in the Koyna region without further loss of time.

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A REPORT ON GROUP DISCUSSION ON DEEP CONTINENTAL STUDIES ALONG JAIPUR–RAIPUR CORRIDOR

One of the important components of the evolution of shield areas is the understanding of the development and the nature of the continental crust, particularly, the deeper sections, which have relevance to the geophysical and petro-geochemical characteristics. The information on these aspects in the Indian Shield is not adequate. In this context, the Northwestern and the Central Indian Shield segments are important in that these areas contain evidences of resurgent tectonics and geological evolution through the Precambrian that led to the development of superposed fold belt systems like the Aravallis, the Delhis, the Sausars and the Sakolis, etc. There are extensive late Precambrian cover sequences whose tectonic setting and development history, particularly in relation to crustal tectonics, is yet to be clearly understood. Major dislocation zones, (e.g., Great Boundary Fault), suspected palaeosutures, important ductile shear zones, and significant lineaments (e.g. Narmada-Son lineament) are indications of significant crustal interactions in these terrains.

In view of the above, the DST launched in 1987 a multidisciplinary research programme entitled 'Deep Continental Studies in India' (DCS), starting with the

studies in Jaipur-Raipur corridor. A Group Discussion was organised during March 23–24, 1993 at the Geological Survey of India, Western Region, Jaipur. 21 scientific papers were presented under the main themes, namely, stratigraphy, tectonics, geochemistry and geophysics of the corridor. More than 50 scientists/ researchers participated in the Group Discussion.

One of the distinctive features of the Group Discussion was the presentation of the first 'Deep Seismic Reflection Profiling' data for the region by the NGRI scientists under DST funded project on the Delhi-Aravalli fold belt and the Banded Gneissic Complex. This note contains a selective summary of some of the highlights of this Group Discussion, including conclusions and recommendations.

Results of metamorphic studies on the Sandmata granulites were presented by R. S. Sharma who emphasised an anticlockwise PT path for the granulites. Fareeduddin reported the occurrence of tectonic wedges of granulite-facies rocks at the western margin of the South Delhi fold belt. The characters of greenstone-like sequences within the basement complex of Rajasthan were highlighted by U. Bose and M. Mohanty. S. Balakrishnan reported the occurrences of sanukitoids (orthoandesites) along with tonalite, picrite and alkali tholeiite from the basement complex. The nature of tectonic contact between the Delhi cover rocks and the pre-Delhi rocks in the South Delhi fold belt was brought out by T. Bhattacharyya. The bimodal character of trans-Aravalli Malani volcanics was highlighted by S. K. Bhusan. The nature and tectonic significance of the Great Boundary Fault was discussed by S. Tiwari and S. Ramaswamy. Several characteristic features of the Central Indian Craton were highlighted by K. K. Sharma and V. Divakara Rao in terms of continental growth during the Proterozoic.

The ductile nature of the lower crust and possible plume tectonics were suggested by U. Raval for the Western Indian Shield. The preliminary results of Deep Seismic Reflection in Nagaur-Ran segment of the Nagaur-Jhalawar corridor was presented by H. C. Tiwari. Sub-horizontal discontinuous reflection pattern and subcrustal domal features were emphasised. B. R. Arora delineated an elongated conductive zone beneath the Satpura Ranges. P. N. Nayak suggested the presence of metastable crust lying between the stabilised crust in the south and in the north, below the Vindhyans, in Central Indian craton. Gravity-magnetic data for the Nagaur-Kota profile were discussed by D. C. Mishra while Cho Shivaji and B. P. Singh discussed the gravity and magnetotelluric data, respectively, for a part of the Central Indian Craton. D. P. Dhoundial wrapped up the deliberations of the Group Discussion emphasising the need for integrated approach for understanding the nature of the deep continental crust.

Tectonic models correlating crustal processes with metallogeny were presented by S. Sinha Roy in the context of NW Indian Shield in Rajasthan. He identified Wilson cycles during Proterozoic times in the tectonic evolution of Rajasthan terrrane and focussed on the metallogenic trends linked with these cycles in the individual fold belts. R. S. Sharma stressed the importance of geochronology, and on the basis of initial Rb/Sr ratio, he suggested that the Gingla-Untala Granites are the possible source of the Malani volcanics. K. Naha stressed the importance of resonance-gravity and magnetic studies for deciphering the basement-cover relations. P. R. Pant explained the methods of identifying deeper crustal features by geophysical methods. T. M. Mahadevan emphasised the need for coincident and integrated approaches wherein geological and geophysical data may be synthesised. V. Rajamani put stress on the study of the upper crustal rocks.

The main recommendations of the Group Discussion are as follows:

(i) Studies may be initiated under deep continental study programme to relate metallogeny with other aspects of deep continental crust as a follow up or continuation project of the DCS project.
(ii) Integration of geological, geophysical and geochemical studies may be taken up in a suitable manner and mechanism for the same may be worked out.
(iii) Studies on Late Proterozoic crustal development *vis-a-vis* Malani volcanism may be taken up with special emphasis on geochemical and geophysical aspects.
(iv) Publication of full text of papers, after peer review, as proceedings of the Group Discussion was recommended.

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GROUP DISCUSSION ON MODELLING IN EARTH SCIENCES WITH SPECIAL REFERENCE TO DECCAN VOLCANISM—A REPORT

The Deccan volcanism is the latest tholeiitic continental flood basaltic episode in the Indian region covering an area of 0.5 million km^2. It has attracted the attention of geoscientists worldwide due to its large volume and timing of its origin close to the K-T boundary. Its origin is attributed to the magmatic activity of the Re-union hot spot at the time of the formation of the western passive margin of India. A three-day group discussion on 'Modelling in Earth Sciences with special reference to Tectonics and volcanism in the Deccan Volcanic Province (DVP)' sponsored by Earth System Science Division of the Department of Science and Technology, New Delhi was organised by the National Geophysical Research Institute, Hyderabad, India, during April 27–29, 1993. Forty-one papers dealing with geological, geochemical and geophysical constraints and modelling of Deccan Volcanism were presented. In the opening remarks Dr. B. P. Radhakrishna, President of Geological Society of India, pointed to (i) the need for further studies to identify the feeder dykes, (ii) establish the chemical stratigraphy, (iii) verify the general applicability of N-R-N palaeomagnetic stratigraphy for the entire DVP and (iv) constrain petrogenetic modelling through further detailed work on the petrography, and geochemistry including isotopic studies.

The main highlight of the meeting was in constraining the duration of the Deccan Volcanism. $^{39}Ar - ^{40}Ar$ dating has provided compelling evidence for a longer duration of Deccan Volcanism. The older lavas of Jawahar-Poladpur Formations yield plateau ages of $\sim$67 Ma and the younger ones of Mahabaleswar $\sim$62 Ma. In the upper lava sequences red boles are more common between flows, which indicate long breaks between eruption episodes. The available evidence indicates eruption between 67 Ma to 62 Ma ago. DT eruption was not triggered by bolide impact at 65+0.08 Ma. Volcanic activity straddles the K-T boundary. The mass extinction at K-T boundary could be a combined effect of DT volcanism as well as bolide impact. Biostratigraphic evidence from the East Coast suggests at least 9 million years duration for DT volcanism. Fossil evidence in the inter-trappean Lameta beds also indicates a much longer duration for Deccan Volcanism.

The interpretations of the DSS data over this region show that the elastic structure below the Deccan Trap is highly complex. There are clear evidences of vertical and lateral variations in the physical properties indicative of complex