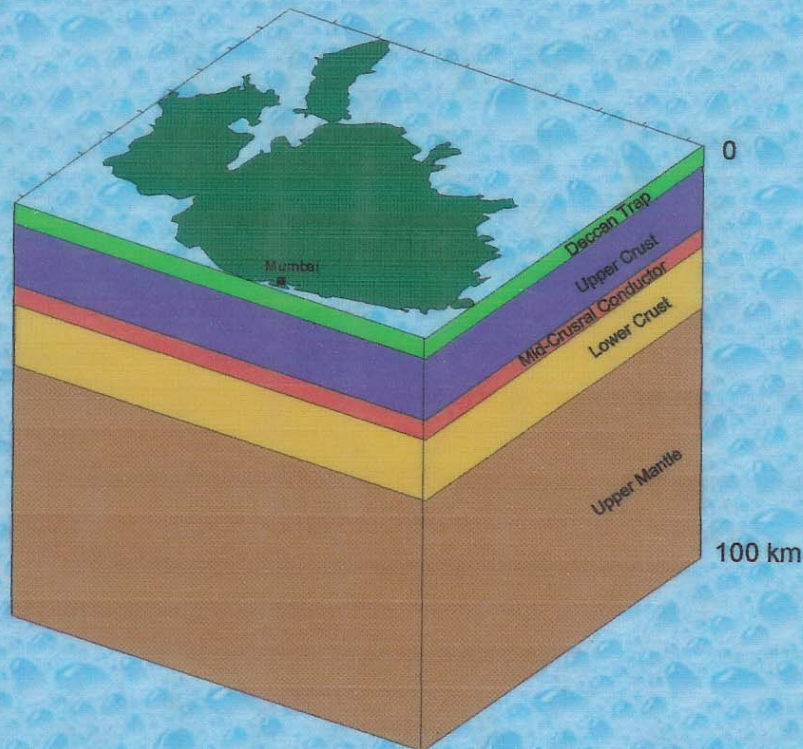


# MAGNETOTELLURIC STUDY OF CRUSTAL GEOELECTRIC STRUCTURE IN WESTERN INDIA IN RELATION TO SEISMOTECTONICS OF DECCAN TRAP REGION

Project completion report  
(Supported by Department of Science and Technology, India)

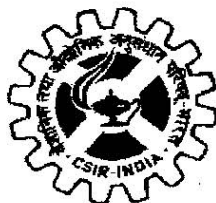


**NATIONAL GEOPHYSICAL RESEARCH INSTITUTE**  
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**HYDERABAD, INDIA**  
April 2002

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## **PARTICIPANTS**

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- Interpretation and report preparation** : T.Harinarayana, BPK. Patro, MVC. Sarma, C.Manoj  
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## 9.16 MAJOR CONCLUSIONS

**Based on the above results, the following are the major conclusions from the present study**

- The average lithosphere thickness obtained from MT data of the present study along a long traverse in Deccan trap region is 100 km.
- Deccan Trap thickness, based on the various geophysical methods and from the present study, varies gradually from east to west with about 1.8 km towards west coast and about 400m along SP profile. While this is the general trend sharp variation in thickness of Trap is observed near Koyna. The resistivity of the Trap is relatively more towards the west as compared to the east indicating more denser or compact nature for the Basalt towards west.
- The upper crust is high resistive, of the order of 5000-10000 ohm-m, where as lower crust exhibits relatively low resistive (500-1000 ohm-m). The results obtained recently along SGT has shown lower values for lower crust (100-500 ohm-m). This indicates a different lower crustal character for Dharwar and SGT.
- There is no significant thickness of sub-Trappean sediments observed along SP, DK, NM and GS profiles, where as large thickness of sediments, of the order of 1.5-2.0 km is observed along E-K profile.
- Hitherto unknown subsurface signature for the Kurudwadi lineament is observed in the present study. The lineament showed a relation with basement tectonics. Two basement faults with steep conducting signatures

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on either side of the lineament are inferred. Apart from such a correlation, basement faults in the form of steep conducting features and distinct lateral resistivity variation in the basement is observed at a few locations along SP and DK profiles.

- Distinct variation in the basement structure is observed along N-M profile, which may have relation to the development of deformations in the region in the form of surface fissures. The relative movement of the blocks in the basement is one of the possible explanation for such a deformation.
- Basement faults near Koyna are delineated as high conductive features and the block structure is inferred for the region. The high resistivity of the blocks have an inverse relation to the velocity structure in this part of the region.