

magmatic emplacement pattern within the crust during Deccan volcanism. Analysis of geophysical fields produced by the deformation due to Volcanism load over Indian lithosphere associated with its passage over Reunion hot spot has yielded information about the variation in the thicknesses of elastic lithosphere and oceanic crust.

The following recommendations were made :

- (i) Geological Survey of India to be requested to publish the geological maps of the region. This will help in getting an estimate of the total volume of the lavas, basement topography, flow-by-flow stratigraphy, feeder dykes etc. The data gaps then need to be filled.
- (ii) Existing geophysical, geological and geochemical data to be compiled in one volume.
- (iii) A borehole to be drilled in the Western region such as Alore where the Deccan Traps are thinnest, to calibrate geophysical interpretation and to undertake the geochemical and geological studies of the cores to constrain modelling activities as mentioned below.
- (vi) Studies of the chemical geodynamics of the Deccan Trap for characteristics of the magma reservoirs and crust and mantle contamination.

Discussions brought out that the whole Deccan Trap region comprises of two main domains: (i) the region N and NW of Sonata belt, having the earliest probable pristine picritic flows and (ii) the region South of sonata belt closer to the West Coast where the lowest layer may have primitive elements. Upper sequences are contaminated. The Eastern part is poorly studied. Three regions in DVP as subdivided above may be chosen based on accessibility and level of information.

- (v) To carry out modelling of the thermo-mechanical processes of the lithosphere-asthenosphere system involved in the Deccan Volcanic Province such as (i) modelling of plume dynamics, (ii) Modelling of the structure of the lithosphere, and (iii) Complex interaction of plume and lithosphere.
- (vi) To constrain the models as mentioned above, the crust and mantle changes associated with these thermomechanical processes be investigated using (i) high frequency seismic tomography coupled with (ii) potential and (iii) electromagnetic geophysical measurements, (iv) Q structure and (v) anisotropy to be investigated using other seismological studies.

It is hoped that on the basis of identified gaps in the data and modelling needs, further multi-disciplinary and multi-institutional research programmes can be optimally planned in this Challenging Area.

*National Geophysical Research Institute, Hyderabad*  
*Department of Science and Technology, New Delhi*

R. N. SINGH  
 K. R. GUPTA

## ACTIVITIES OF THE GEOLOGICAL SURVEY OF INDIA TRAINING INSTITUTE

In the early days of the history of the Geological Survey, training for the new entrants was invariably given by some of their seniors in the field, while conducting regular mapping on mineral investigation. Since the early 50s training camps were held for a couple of months each year, mainly in geological mapping for newly recruited officers of the Survey, though a few from the State Geological Surveys and the Universities were also given an opportunity to take advantage of this facility, at their own cost. With increase in the number of recruits and the need to familiarise them in many specialised sub-disciplines (like petrology, geophysics, engineering geology, photogeology etc.), it was felt that a full fledged Training Institute is necessary and this was started in 1976. Its Headquarters is now at Hyderabad.

The Major objectives of the Institute are :

- i. to impart training in the latest methods of geological mapping,
- ii. familiarise them with other related sub-disciplines like geophysics, geochemistry and provide insight to interdisciplinary knowledge, and also train them in the use of new tools and techniques (for example : air photo interpretation) and
- iii. conduct short term courses in different sub-disciplines to officers of different cadres.

Besides the main centre at Hyderabad (Hqs), the other Centres are at Aishmuquam (Jammu and Kashmir), Kuju (Bihar), Raipur (Madhya Pradesh), Chitradurga (Karnataka) and Zawar (Rajasthan). Each of these centres has been so chosen to give specialised training in specific fields, because of their geographical location in widely different geological domains, thus enabling exposure to almost all types of landscape and formations in the country.

The Centre has also a very well equipped laboratory to initiate the trainee in the study of minerals, rocks, fossils, engineering properties of rocks, conventional geophysical methods of survey and interpretation of air and satellite photos. Recently a PC-AT based Digital Processing System has also been installed. The Centre has a museum, a library and the faculty are senior officers of the GSI forming the core, with guest geo-scientists often drawn from National Institutions and Universities. Lecture notes are provided to all the participants. Thus it can be seen that the Geological Survey of India has established a great training facility not only to cater to the needs of its own officers, but also to others in other earth science organisations.

The Training Institute at Hyderabad brings out every year a pamphlet (for example October, 1992 to September, 1993) giving in detail the name of the course, duration, seats available, venue, eligibility, last date for receipt of nominations and tentative dates of commencement. While the training courses were imparted free of cost till recently these are now open to outsiders on payment of course fees. Schedule of charges for outsiders is as follows :

	Charges for Govt. Depts/Universities	Charges for others
1. Courses which last for one week only.	Rs. 2,000/- per week .	Rs. 2,000/- per week.
2. Courses which last up to three weeks.	Rs. 2,000/- plus Rs. 1,500/- per week or part thereof from 2nd week.	Rs. 2,000 plus Rs. 1,500/- per week or part thereof for 2nd week.
3. Courses which last up to five weeks.	Rs. 5,000/- plus Rs. 1,000/- per week or part thereof from 4th week.	Rs. 9,000/- plus Rs. 1500/- per week or part thereof from 4th week.
4. Courses which last up to twenty weeks.	Rs. 7,000/- plus Rs. 750/- per week or part thereof from 6th week.	Rs. 12,000/- plus Rs. 1,000/- per week or part thereof from 6th week.
5. Courses which last more than twenty weeks.	Rs. 18,250/- plus Rs. 500/- per week or part thereof from 21st week.	Rs. 27,000/- plus Rs. 750/- per week or part thereof from 21st week.

It is highly desirable that geoscientists in National Institutes, State Organisations and the Universities take advantage of this facility. For more details write to: Deputy Director General, GSI Training Institute, GSI Complex, Bandlaguda, P.O. Mansoorabad, Hyderabad-500 660.

The accompanying table shows the calendar of courses being conducted. In addition some specialised courses in Quaternary geology, Himalayan geology, natural hazard mitigation, geostatistics, isotope geochemistry and geochronology, trace element geochemistry in petrogenesis etc., are on the anvil. In case sufficient popular demand for any other courses are received, these may also be conducted.

R. V.

Calendar of Training Courses by GSI Training Institute

Sl. No.	Name of the Course	Duration	Venue	Tentative Date
(1)	(2)	(3)	(4)	(5)
1.	Orientation Course for Geologists.	6 months with about 6 weeks at each centre in the following order :	Geological Mapping – Chitradurga Mineral Exploration – Zavar Photogeology – Raipur Lab. Techniques – Hyderabad	November to May  (Any one or more of the four modules may be chosen)
2.	Photo-interpretation and Remote Sensing techniques, sponsored by NNRMS (ISRO).	3 months	– Hyderabad	July to September
3.	Basic Course in Glacialogy (Sponsored by DST).	3 weeks	– 1 week at Lucknow followed by 2 weeks at Glacier in U.P. or H.P.	May – June
4.	Basic Course in Environmental Geology.	2 weeks	– Hyderabad	July or August
5.	Basic Course in Sedimentology.	3 weeks	– Kuju Centre	January
6.	Basic Course in Engineering Geology.	3 weeks	– Dehra Dun	November
7.	Interpretation of Airborne Geophysical data for geologists and geophysicists.	4 weeks	– Hyderabad or Chitradurga	August
8.	Basic Course in Structural Mapping.	4 weeks	– Chitradurga or Zavar	January
9.	Basic Course in Exploration for Gold.	4 weeks	– Chitradurga	March
10.	Advanced Course in Digital Image Processing System (DIPS).	4 weeks	– Hyderabad	March