10. Post disaster relief measures should be properly organised, co-ordinated and monitored taking into account the community response.
11. It is recommended that a D.S.S. profile should be shot from Indian shield (if possible from Delhi) to the MCT or beyond to provide better data on velocity structure and Moho configuration in the area.

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MULTIDISCIPLINARY TECHNIQUES IN MINERAL EXPLORATION - A CASE STUDY

Mineral exploration strategies are becoming exceedingly complex with the leads from old workings fast running out and serendipitous discoveries becoming increasingly rare. Conceptual modelling is rapidly becoming the forte in mineral prognostication. Such modelling calls for the creation of a vast data base through multidisciplinary studies, and their rigorous analysis using computer. An exemplary effort in this direction is the EEC-funded joint R & D programme by the Geological Survey of Spain (ITGE) with the Southampton University (U.K.) and other agencies in Spain (ENUSA) and Portugal (ENU). The fundamental aim of the programme was to develop new mineral exploration strategies in the search for Sn, W, Nb, Ta, Li, Sb, Au, and U in the Iberian Peninsula. The results of this interesting excercise, carried out during 1987-1990, are published in neatly got up volume (109 pages) titled "Development of New Multidisciplinary Techniques for Mineral Exploration in several areas of western Iberian Peninsula", edited by P.Gumiel, C. Anton-Pancheco and R. Campos and published by the Spanish Geological Survey in 1991.

The focus of the multidisciplinary study was the La Codosera area of the western Spain which forms part of the terrane called Central Iberian Zone, bounded by major shear zones of the Hercynian orogen. The exploratory work commenced with the synthesis of geological maps followed by detailed sturctural analysis which revealed the important role of transpressive tectonics in the evolution of the terrane. This was followed by geochemical surveys, initially of panned heavy mineral concentrates and then by detailed stream sediment sampling, soil geochemical surveys and lithogeochemical surveys. Detailed geochemical maps were generated using standard computer programmes and three potential gold-bearing areas so identified were drilled and set apart for detailed exploration. A large amount of new data was generated on gold mineralisation through fluid inclusion studies, sulphide geothermometry, thermoluminescence and betaautoradiography. The studies showed that the auriferous veins formed from dilute 350°C, CO_2-rich fluids at 10-13 km crustal depths. These fluids had a shear zone origin and interacted with black slate wall rock to precipitate gold, which was lattice bound within arsenopyrite.

Bouguer gravity anomaly map was produced by establishing gravity bases. Selected anomalies were studied by gravity modelling using computer programme. The data were then integrated with geological map from which the 3-D configuration of granitic bodies was deciphered and extension faults were picked up. Landsat Thematic Mapper multispectral data were analysed using standard image processing techniques to produce different types of colour composites. The Landsat data used in conjunction

with a variety of other information was used to postulate strong structural control of Au-Sb mineralisation in the La Codosera area. Mineralogical and spectral reflectance studies were carried out and the data were digitally classified. These studies helped to clarify the geological details and to classify the soils over a vast region. The wide array of geological, structural, aeroradiometric, gravity and Landsat TM data generated under this project were integrated into a GIS (Geographic Information System). A synthetic geological map and several derived maps were created from Geographic Information System data base. A blind granite body was also interpreted from these data which may be important from the exploration point of view.

Creation of a GIS, which can be frequently updated with new data inputs from time to time, is an essential pre-requisite for an integrated approach to the search for minerals. This approach has been highlighted by this Spanish Geological Survey publication. Similar studies should be initiated for the potential mineral provinces in the country in a systematic manner by the various exploration agencies.

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INDIA'S DIAMOND POTENTIAL

India has the world's largest diamond cutting and polishing industry, employing 600,000 artisans. The industry processes 50 Mct/y of mostly small diamonds, half the world's production, but because it only produces 18,000 ct, India imports the remainder at a cost of $US 1,800 million. Yet India has a diamond mining history stretching back nearly 3,000 years and was the world's leading producer until the late 19th century. Many experts believe that it remains under-explored and has the potential for new discoveries.

The Indian Government is currently liberalising and privatising its economy in general, and is expected to announce new mining legislation early in 1993, aimed at promoting foreign private sector investments in exploration and mining. This prompted the United Nations Department of Economic and Social Development (UNDESD) to organise the recent Round Table Conference in New Delhi, with field trips to the Panna Diamond mine in Madhya Pradesh and the Kimberlite areas in Andhra Pradesh.

A score of experts from the diamond industry and universities in Australia, Canada, Russia, the U.K. and the U.S. participated with Indian geologists and engineers, to discuss the current exploration, evaluation, mining and processing techniques, and to assess India's diamond potential. The conference ended on a positive note, with additional U.N. assistance in exploration under consideration, and mining company representatives expressing interest in the forthcoming regulatory changes which are expected to apply to gold and other minerals as well as to diamonds.

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