3. MINERAL TECHNOLOGY

Introduction

The prime concem, the world over, is to discover blind or concealed ore deposits, as the existing mineral resources are depleting fast. To meet this challenge, especially in the coming decades for the development of mineral sector in India, applicability of new exploration techniques and use of the older techniques in an improvised manner are essential.

It may be stated that the country is largely covered by what can be described as metallogenetically favourable Precambrian Shield and large areas within it characterised by greenstone belt geology. It should also be bome in mind, that obvious and easily recognised mineral occurrences have been explored. The search now is essentially concentrated on, with almost no indications, hope that it might lead to the discovery of hidden mineral occurrences.

Another major feature that is to be considered in the context of the present day exploration activities is the increasing importance of environmental concems, sometimes forcing intemational companies to shift exploration to less environmentally sensitive areas and even away from countries with strict environmental controls. Examples can be cited in this country of area such as covered by tropical forests in the Westem Ghats (part of Kamataka, Goa, Maharashtra), Orissa and parts of Andhra Pradesh etc.

Technology Services

Geochemical Survey

Geochemical Survey is one of the specific exploration methods available. The modem approach (especially with the availability of sophisticated instruments) is to analyse samples for several or multi-elements (twenty or more elements) to locate targets. To process this multi-element data and relate to the particular geological setting, an understanding of multivariate statistics and software to perform the necessary computations are required.

A unique electrogeochemical method for base and precious metal exploration developed in the erstwhile USSR had a limited application in this country. This technique "CHIM method (an acronym derived from three Russian words meaning ⊕ partial extraction of metals) has been successfully used in Russia in exploration for gold, lead-zinc, copper, copper-nickel and beryllium deposits under vastly different conditions of geologic environment, overburden and depth of burial. Several deposits have been detected to depths of even 400 m, which are difficult or impossible to detect using surface geochemical or geophysical methods.