

## *Exploration Techniques*

Since easy-to-find deposits have been discovered and mined, India's task now is to detect concealed or hidden deposits and thus, more sophisticated technology has to be applied. This will result in an increase in capital investment in mineral exploration which is an extremely high risk activity.

The greatest advance in exploration today is the use of ore deposit modelling.

Diamond exploration needs a strategy to locate new pipes. The main issue would be to identify diamondiferous kimberlites pipe from the non-diamondiferous bodies. Three methods are normally applied viz. indicator mineral sampling, micro-diamond search and airborne geophysics followed by ground magnetic/gravity surveys. In addition the new powerful tool namely trace elements, studies in garnet and chromites, will greatly aid in evaluating the diamond potential of any igneous rock.

India is aware of the **systematic coverage of Canada by aeromagnetics has produced maps at 1:50,000 scale that are capable of pin-pointing features of 1-2 km dimensions, such as individual faults, iron formation bands, and small intrusive bodies, thus aiding specifically in locating structures and environments favourable for gold.** Even the data from high level aero-magnetic surveys over all types of geological environment may be reprocessed to produce aeromagnetic maps on enlarged scales.

Similarly, development and mining of small base metal deposits has been advocated as there is a wide gap between demand and domestic supply. Some of the small copper deposits already identified could be utilised and their development and small-scale mining operation are the only answers in augmenting the country's metal production leading to self-reliance and self-sufficiency. Development of about 12 small deposits will contribute to an equivalent production of a large deposit.

With the inventory of copper deposits already available as well as data from the recent investigation, it is possible to draw an integrated scheme to develop a cluster of mines (on deposits located closer to each other). It is anticipated, that a moderately sized mine, producing 500 tons of ore per day and producing upto 5000 tons of copper concentrates per year, shall certainly contribute to a sizable quantity of additional copper production.

## *Drilling*

Indian manufacturers have the capabilities to manufacture blast hole drills upto 250 mm dia, while small mines prefer 100 mm & 150 mm dia. drills. In high benches at some coal and iron ore mines, 312 mm dia. drills have been deployed.

In-pit hauling units, notably dumpers, have undergone simultaneous development in order to cope with the size of the excavating equipment. While 240 t dumpers are used in other parts of the world, in India 170 t dumpers are the latest ones. India is yet to adopt diesel-electric dumpers.