Marine Minerals

Marine minerals are an important potential resource of metals such as copper, cobalt, nickel and titanium that could be utilized in future in view of increasing demand of these metals and dwindling land reserves. NIO has carried out extensive surveys for such minerals both in shallow waters and the deep sea.

Coastal placer minerals

Rich reserves of minerals containing titanium, chromium, uranium, thorium, zirconium and gemstones have been found along the coasts of Maharashtra, Kerala, Tamil Nadu, Andhra Pradesh, Orissa and parts of West Bengal.

The Ministry of Mines has allotted offshore blocks to placer mining companies. Some of the blocks (off Maharashtra) are from deposits identified by NIO.

Deep-sea polymetallic nodules

Exploration with 30,000 km of multibeam sounding data and 11,000 samples has led to India being allotted an area of 75,000 km² in international waters of Central Indian Ocean Basin that contains large reserves (450 million tonnes) of mineral-rich polymetallic nodules. Estimated reserve of useful metals (Mn, Ni, Cu, Co) is ~100 million tonnes.

Investigations have also led to identification of a First Generation Mine site and evaluation of response of deep-sea environment to artificial and natural disturbances.

Ferromanganese crusts

Rich in Co, Pt and other metals, these crusts are found on oceanic seamounts and abyssal hills. NIO has surveyed an area of 40,000 km² in the Afanasiy Nikitin Seamount (ANS) area from the equatorial Indian Ocean.

Hydrothermal sulphides

NIO’s efforts have led to the discovery of hydrothermal plumes indicative of new vent fields over the Carlsberg Ridge, signatures of plumes over the Central Indian Ridge and hydrothermal mineralization in the Andaman Sea that are potential sites for minerals rich in Zn, Pb and Cu.