

PERTEMUAN PERSATUAN (Meeting of the Society)

Ceramah Teknik (Technical Talk)

Status of Beach Placer Mineral Exploration and Exploitation: Global Scenario

22 June 2007

Geology Lecture Hall, University of Malaya

(in collaboration with Department of Geology, University of Malaya)

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Report

A small audience was present in the Geology Lecture Hall to listen to the technical talk by Prof. Chandrasekar at 5.30 pm on Friday, 22 June 2007. The unusually small crowd was because all our students were away on term break. Nevertheless it was an interesting session with active participation from those present in the discussion following the talk. The abstract of his talk is given below.

Report by Prof Dr Lee Chai Peng

Abstract

The mineral deposits of the land will be exhausted one day due to industrial growth and continuous exploitation by man. It is essential to search for an alternative source. Nearly 7000 km of Indian coast and the shallower portion of the seas is the obvious choice for detail exploration and exploitation. The most important minerals in these areas are the heavy mineral placer deposits, which are high specific gravity resistant minerals usually accumulated in the beaches. Beaches are an interesting area from a mineral resource point of view. Exploration and exploitation of these deposits are comparatively cheaper. Bulk of the material forming the beaches are washed products transported down to the seacoast by rivers and streams derived from continental rocks by weathering processes. The most important heavy minerals present in the beach sands are ilmenite, sillimanite, leucoxene, rutile, zircon, garnet and monozite. The provenance of these heavy minerals is the crystalline rocks of the hinterland. However, the immediate source of these heavy minerals is believed to be the back shore sediments and continental shelf sediments deposited on the palaeo beaches during low stands in the area. The transgressing shoreline concentrated and deposited these heavy minerals by the action of waves on the present day beaches and backshore. These placer deposits are mined from the beach and backshore.

Even mineral concentrations of gold, diamond and platinum also occur in the beach sector as well as in the submerged extension of stream channels, generally within several kilometers of the primary source.

Offshore placers of potential economic importance are likely to be restricted to shelf areas in water depths less than about 150 m adjacent to the primary source rock on land or rocks cropping out on the seafloor. Some of the well known offshore placers are tin deposits off the coast of Indonesia, Malaysia, Thailand and UK.

The diamond deposits of southern Africa off the Orange River mouth in Atlantic is well known. Large scale production by De Beers Marine commenced in 1989 in Namibian waters and lot of developments has taken place recently. Remotely controlled sea bed mounted excavation systems have assumed a major role. They permit highly selected extraction and enhanced the recovery of diamondiferous gravels from 200 m water depth. In India occurrence of beach placers are well known from a number of localities along the long coastal stretch. Detailed explorations of these placers are in progress.

Considering the fact that there is growing need and application of placer minerals in various mineral based industries, a new thrust should be given to placer mineral exploration. These deposits are readily exploitable, marketable and can easily capture the international market. Full attention should be given to take stock of the present status of exploration and exploitation and attempts should be made to search for these minerals in the unexplored areas at the earliest. It is also suggested that multi disciplinary studies should be done to understand the environmental impact and to access the correct picture of exploitation status.

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Prof N Chandrasekar delivering his talk



From Left: EV Gangadaram, N. Chandrasekar, Charles Hutchison, Zainudin Ariffin, CP Lee and Nur Iskandar



Tea break before the talk



Part of the audience at the talk by Prof N Chandrasekar



Immediate Past President Prof Dr CP Lee introducing the guest speaker



Immediate Past GSM President Dr Lee CP presenting a token of appreciation to Prof N Chandrasekar