

Chapter -V

Conclusions / Implications Of
Studies

IMPLICATIONS OF PRESENT INVESTIGATIONS :

From the discussions in the earlier chapters, conclusions are derived from the present investigations consisting of field and laboratory studies of the Newara beach sand.

Notwithstanding the constraints of the field studies within the Newara beach, the cross section as observed within the dug-wells on the beach indicated the horizontal laminations of heavy minerals, deposited in the marine environment. The cross-trough stratifications in the section show least heavy mineral concentration which could have been deposited in the subaerial environment.

The bulk density measurements and the modal analysis of the Newara beach sands revealed a productive zone in the central and vicinity of the central part towards the south for the heavy mineral deposition. This productive zone has an aggregate strike length 1300 meters and an aggregate width of 80 meters. The modal analysis of raw sand indicated the higher content of heavy minerals in plus 3.25 ϕ size fraction. The heavy mineral concentration was observed to be higher with the decrease of the size and the mechanical separation of raw sand helps in extracting the heavy minerals with greater ease. The decreasing order of abundance of heavy minerals in the Newara beach sand is ilmenite, magnetite, hematite, leucoxene, rutile,

tourmaline, and zircon. Apart from the above observations, it has also been noticed that the mineral of interest - ilmenite - found to be selectively deposited between the regions from low tide to high tide environments in the central and vicinity of the central part of the beach towards south.

From the grain-size analysis, it has been observed that the sediments from the central and southern parts of the Newara beach are relatively more sorted as compared to the northern part of the beach between the low tide and high tide environments. This supports the inferences mentioned in the earlier paras of the selective deposition of the heavy minerals in these parts of the beach.

It may be recalled that marine activity predominates over eolian activity in the southern and central parts of the beach than the northern part. It is accomplished by wider surf zone helping in sorting of the sediments and selective deposition of the heavy minerals. The presence of creek at the central part of the beach has a critical role for the supply of fluvial sediments having heavy minerals from the hinterlands. The source of the heavy minerals has also been attempted and it has been shown that the opaque mineral constituents of tholeiitic basalts consist of ilmenite and magnetite. The primary nature of ilmenite and other heavy minerals are found to be well preserved in some of the microsections of laterites, and these lateritic

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fragments having the heavy minerals are sometimes found in the beach sand. It can therefore, be inferred that the heavy minerals of the beach sands might have been derived from the basaltic terrain.