MARINE GEOPHYSICAL STUDIES FOR IDENTIFYING THE POSSIBLE ZONES OF ARCHAEOLOGICAL INTEREST IN GULF OF CAMBAY, WEST COAST OF INDIA

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Marine magnetic, side scan and high resolution sub bottom profiler surveys were carried out to find the possible extension of the anthropogenic findings in the Gulf of Cambay. The sub bottom profiler surveys have delineated a NE-SW trending sand waves were associated with a "Mega Ripple" zone with a relief of about 0.8 to 3.5m. Side sonar images reveal, sand waves over a length of 5 km with spatial distance of 120-160 m, having a height varying from 0.2 to 2m. These sinuous symmetrical sand waves occur at water depths of 25-30m in the southern parts of Gulf and at a distance of 12km from the coastal land region. East -West trending sand ripples of 0.2 to 0.3 m height are also observed between the sand waves, which could be due to tidal currents of the Gulf. The high reflective lineation of sand wave could be due to an underlying structural fabric. Magnetic profiles taken in NW-SE direction crossing over the sand waves have given small amplitude high frequency anomalies embedded in a broad wavelength of large amplitude regional magnetic anomaly. These small magnetic anomalies of 3 to 12nT are found to have one to one correlation with the crest of sand waves brought out by sub bottom and side scan surveys. When the magnetic anomalies are interpreted both with the forward and reverse modelling has brought out spherical, tabular ellipsoidal and polygonal bodies of finite dimensions. Most of the bodies have depth extension ranging from 2 to 56 m depth. The lateral dimensions of some of the structures are in the order of a few meters and out of these, bodies occurring at shallow depth with less depth persistence could be of anthropogenic in origin. When the side scan sonar mosaic is studied in conjunction with the magnetic signatures it can be inferred that the mega ripples sand waves are not merely sand barriers aligned perpendicular to the currents but possibly could be reflecting the underlying structure. However the low order of magnetic anomaly and their shallow depth persistence in all probability indicates that the structures

could be of anthropogenic in nature. Incidentally some of the reputed archaeological findings in the Gulf of Cambay fall within the proximal zone.