

Source Potential Evaluation of Paleogene - Neogene Sediments in Cambay - Tarapur Area, Cambay Basin, India

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Source rock generation potential of Paleogene - Neogene sediments in the subsurface of Cambay - Tarapur area has been evaluated based on organic matter maturation studies to provide lead for hydrocarbon exploration. The study suggests that dispersed organic matter in the studied sediments is mainly land derived and the presence of phytoplanktons at different stratigraphic levels indicate the sizeable marine input also. Miocene sediments in the area are thermally immature (TAI 2.0) except in the central part from Kheda in the north to Watodara in the south and Ras in the east to West Bhalda in the west where marginal maturity (TAI 2.25) has been observed. The Oligocene sediments through out the study area are marginally mature (TAI 2.25) and represents humic palynofacies, hence, modest generation of gaseous hydrocarbon is envisaged except in the western most part of the area around Pisawada where these sediments are immature (TAI 2.0). The Middle - Late Eocene sediments in the area from Mahuda in the north to Kalamasr in the south, Ras in the east to Indernaj in the west is thermally mature (TAI 2.75) and beginning of intense generation phase for liquid hydrocarbon is inferred. The Early Eocene sediments showing top of oil window (TAI 2.75) and intense generation phase for liquid hydrocarbon has been envisaged in the west and south western part of the study area represented by Pisawada, Mitili and Akholjuni. The Early Eocene sediments showing retardation of liquid hydrocarbon generation phase (TAI 3.25) and intense generation phase for gaseous hydrocarbons (TAI 3.5) lies in the area bounded by Mahuda in the north to Ras in the east and Indernaj in the west. The present study suggests that Early Eocene sediments in general are in intense generation phase for gaseous hydrocarbon except in western part where they are in oil window. The Middle - Late Eocene sediments are optimally mature for generation of liquid hydrocarbon while Oligocene and Miocene sediments are immature to marginally mature, capable of generating gaseous hydrocarbon in the early stage of maturity.