

## **ORGANIC GEOCHEMISTRY AND SOURCE ROCK CHARACTERISTICS OF SALT RANGE FORMATION, POTWAR BASIN**

**Wasim Ahmad and Shahnaz Alam**

*Hydrocarbon Development Institute of Pakistan*

The hydrocarbon source potential of Precambrian Salt Range Formation was assessed by analysis of 91 outcrop and core samples using total organic carbon contents (TOC), pyrolysis, liquid column chromatography, gas chromatography, gas chromatography mass spectrometry, vitrinite reflectance spectroscopy and low carbonisation analysis (Fisher Assay). The formation is exposed along the outer periphery of the Salt Range from Kalabagh in the west to the eastern Salt Range. The oil shales found near the top of the Precambrian Salt Range Formation of eastern Salt Range are extremely rich in organic carbon, TOC upto 30 % and have excellent geochemical source rock parameters (HI upto 879 and EOM/TOC upto 255). Also the low grade oil shales found in the central and western salt range are excellent potential source rocks having TOC 2.5-8%, HI upto 746 and EOM/TOC upto 204. The extractable organic matter (EOM) of most of the surface samples from Salt Range Formation contains less than 20% saturated hydrocarbons, which reflects their low maturity. However the oil shale extracts have SHC portion partly more than 40%. The organic matter consists predominantly of prebitumen and solid bitumen and partly contains major proportions of liptinite. The oil yield of high-grade oil shales varied from 15 to 20% of rock weight.