Organic Richness and Thermal Maturity of Patala Formation, Hazara Area

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Abstract

Hydrocarbon exploration requires the presence of organic rich, thermally mature rock units containing oil or gas-prone kerogen.

In this paper, we have evaluated the organic richness, thermal maturity and elemental composition of organic matter on twenty one (21) outcrop samples of Patala Formation, collected at the base of the Thandiani Peak near Abbottabad in Hazara Area.

The organic richness, vitrinite reflectance and elemental composition of organic matter were determined by using the standard procedures.

The total organic carbon (TOC) and vitrinite reflectance (VR) analyses on samples show that they have fair to excellent organic richness and are thermally mature to generate liquid hydrocarbons. The elemental ratios H: C, O: C and C: N suggests that organic matter is a mixture of type I and type II Kerogen. These types of kerogen can generate mainly oil by attaining adequate maturity level. The results of this study are highly encouraging and suggest that the Patala Formation in Abbottabad and surrounding areas may have generated oil with some liquefied gas under the adequate conditions of temperatures, pressures and overburden rocks and have charged the traps generated by the tectonic activity in the area.