

## **COAL-BEARING STRATA OF SHEMSHAK FORMATION; POTENTIAL SOURCE ROCK FOR SOUTHERN CASPIAN HYDROCARBON RESERVOIRS**

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Southern domains of the Caspian Basin contain several significant hydrocarbon reservoirs, nonetheless, the source rocks of these hydrocarbons are not thoroughly investigated. In the southern coast of the Caspian Sea the Shemshak formation of the Central Alborz is the most important organic-rich strata that range from Upper Triassic to Lower Jurassic which is several hundred meters in thickness. Several important coal deposits are situated in this unit. These thick organic and coal rich sediments consist of sequences of blackshales, siltstones, sandstones and coal seams, which were deposited in a deltaic environment. Field studies, petrography and geochemistry of organic materials of this potential source rock showed that the main types of kerogen are III - II and III, and the most abundant maceral is vitrinite type A and B. The source rock in many locations is in the oil-window and in some places in the gas generation window. The main generated hydrocarbons are paraffinic oils, huge amount of thermal gas, as well as some light naphtenic oils and condensates. These hydrocarbons were injected into microfractures and in deeper zones (higher thermal maturation) were cracked into thermal gas. These events caused overpressure in coal seams and thus, subsequent partial migration of adsorbed hydrocarbons. Active tectonic in the area facilitated petroleum migration by generating well-developed microfracture systems in the source rock. Consequently, Shemshak formation were the main source rock of the gas reservoirs and heavy oils of the southern Caspian Basin, where it is buried to sufficient depths and so, attained required maturity levels.