The Geochemical Characteristics of Coal Measure Strata and Coal-Derived Hydrocarbon in Huhehu Sag, Hailaer Basin

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Abstract: Hailar Basin is a Mesozoic inland rift type basin in northeast China, which contains a series of fault basins by more than 20 sags. Hailar Basin is the petroliferous basin, and also one of the basins with low coal rank in our nation. Not only some periphery sags, such as Yimin, Dongming, Huhehu, Chagannuoer sags, developed coal seams widely, but also the central structural zone of the basin, such as Wuerxiong and Beier sags have a few thin coal seam and coal streak. At present, the discovered oil fields mainly locate in the central depression belt of Hailar Basin. The periphery coal-bearing sags widely appear favorable hydrocarbon shows, and every coal-bearing sags acquires a little industrial oil flow by oil testing, but the key exploration breakthrough have not achieved for a long time. So, for the basic petroleum geology feature, the hydrocarbon generation potential of coal measure strata will especially be the key problem of the petroleum exploration. In the paper, take Huhehu sag for example, the geochemical index of coal seam and dark mudstone in Nantun formation source rock containing organic carbon, chloroform asphalt “A”, pyrolysis chromatography, gas chromatography, carbon isotope, organic elements, and maceral are studied based on the testing data, and the hydrocarbon generation potential of coal measure strata in Huhehu sag is synthetically researched combined with sedimentary environment. Finally, the results are as fellows: the coal seam of Huhehu sag is non-normal source rock without hydrocarbon generation potential; some dark mudstone of coal measure strata in Huhehu sag have high organic carbon content influenced by coal seam, and have certain hydrocarbon generation capability but low potential, which belong to non-major source rock; the geochemical index of the other dark mudstone accord with normal source rock range, which are the major source rock. But with thin single and total layer thickness, this type of mudstone has the small scale and so has less hydrocarbon generation and expulsion potential. The coal measure strata in Huhehu sag is considered as hard to produce industrial value oil by integrated analysis. The results of this paper provide scientific basis for hydrocarbon exploration direction and decision of periphery Hailar Basin, and abundant data basis of further coal-formed hydrocarbon research.