

RESERVE ANALYSIS BY QUANTITATIVE PETROLEUM SYSTEMS ANALYSIS - PRICASPIAN BASIN, KAZAKHSTAN AND RUSSIA

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Petroleum systems within the Pri-Caspian Basin are charged from at least four source rock sequences: Middle-Upper Devonian marine clastics and carbonates, Upper Devonian(?) to Lower Carboniferous marine carbonates, Upper Carboniferous-Lower Permian marine clastics, and Triassic marine to non-marine clastics and carbonates. This conclusion is based on the results of extensive geological investigations and geochemical characterization of over 400 potential source rocks and 225 crude oils. The crude oil collection is considered to be representative of the reserves in the basin, with samples included from all major fields in the post- and pre-salt stratigraphic complexes. This data set, combined with available reserve estimates, provides the basis for an initial assessment of hydrocarbon distribution based on reservoir interval, as well as the assignment of the source rock responsible for the hydrocarbon charge. Reservoir volume estimates are based in terms of original barrels oil equivalent, and includes the Soviet-era categories of A+B+C1. The relative volume of hydrocarbon reserves are distributed according to reservoir horizon to be Devonian (2%), Lower-Middle Carboniferous (76%), Upper Carboniferous-Lower Permian (7%), and Upper Permian-Cretaceous (15%); whereas the assignments according to correlative source rock horizon are Middle-Upper Devonian (17%), Upper Devonian(?) - Lower Carboniferous (70%), Upper Carboniferous-Lower Permian (12%), and Triassic (1%). Examination of this data on basin- to prospect-scales provides significant impact to exploration risk assessments.