SEDIMENTOLOGY OF THE PRODUCTIVE SERIES, AZERBAIJAN

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The sedimentology of the largely Pliocene Productive Series of Azerbaijan is surprisingly poorly understood despite containing an estimated 26 billion barrels of oil equivalent in the South Caspian Basin. Excellent exposures of the Productive Series across the Aspheron Peninsula allow for detailed examination of the sedimentology of the succession, leading to an improved understanding of the environments of deposition represented, and hence evaluation of reservoir architecture and characteristics.

Field observations have identified a wide variety of facies. These include conglomerate and medium/coarse grained sand filled, amalgamated channels of braid-plain deposits; downstream accreation units of large-scale, medium/fine sand mid-channel bars of a fluvially dominated delta top setting, distributary channel and distributary mouth bar sands of the proximal delta front, and laminated fine sands, silts and clays of the distal delta front. Sand body architecture/connectivity, petrography and diagenesis vary within the different environments of deposition so far identified and hence reservoir quality of each depositional setting also varies.

Ongoing studies are concentrated upon quantifying the lateral and vertical changes of sand body architecture and petrography variability in order to assess their influence upon reservoir quality. It is expected that quantification of sand body architecture will be facilitated by the use of satellite imagery and by comparison with deposits of the modern Volga Delta. Productive Series sediments are difficult to correlate because of the relative paucity of microfossils. Instead, whole rock geochemistry and heavy mineral analyses may provide a robust correlation tool for outcrops and the subsurface. Projected work will include a pilot study to evaluate the applicability of geochemical correlation techniques to the sediments of the Productive Series.