

WHPIERCE EXPLORATION

Pierce, W. H., Zumberge, J., and S. Brown, 2004, Zagros Geochemical Study, Petroleum Geochemistry of Crude Oils and Review of Source Rocks from the Zagros, Proprietary GeoMark Research Report, Houston, Texas, 159 p.

Abstract

This GeoMark geochemical study of oils from the Zagros Region of the Middle East and Asia documents the composition 312 oil samples from over 196 oil and gas fields and seeps. The samples come from over 70 different hydrocarbon reservoirs. Oil samples have been analyzed for over 30 different parameters, including carbon isotopes and biomarkers. Cluster and principle component analysis have been used to convey as much understanding to the hydrocarbon distribution as possible. The objective of understanding the source rock of the oils is supplemented by a large review of the literature on source rock characteristics. Over 45 distinct stratigraphic units with source rock potential are documented in this literature review. This background study of source rock on the Arabian Plate serves in combination with the oil analyses to enable interpretation of the Zagros oil samples. This study devises a oil family classification system of 17 different families. The report discusses geographic, geologic, and stratigraphic occurrence of the oil samples and follows with correlative discussions of the likely source rock ages and source rock characteristics of each of the 17 families. The study identifies three major mixed-oil associations. The relative importance of individual source rock contribution to the mixed families is assessed. Interpretations of the source rock depositional settings are inferred from the oil composition data. Implications for exploration such as potential new source rock horizons, and hydrocarbon product prediction are stated. In order to enable understanding of this exceptionally large data set, over 137 figures and tables are integrated into the report and used to illustrate oil types, oil families, and source rocks.

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