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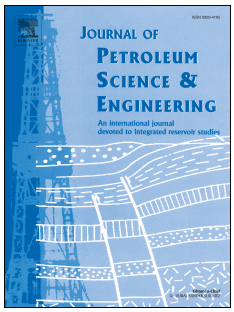

C_5–C_{13} light hydrocarbons of crude oils from northern Halahatang oilfield (Tarim Basin, NW China) characterized by comprehensive two-dimensional gas chromatography

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PII: S0920-4105(17)30592-2

DOI: 10.1016/j.petrol.2017.07.043

Reference: PETROL 4129

To appear in: *Journal of Petroleum Science and Engineering*

Received Date: 22 May 2017

Revised Date: 13 July 2017

Accepted Date: 13 July 2017

Please cite this article as: Chang, X., Shi, B., Han, Z., Li, T., C_5–C_{13} light hydrocarbons of crude oils from northern Halahatang oilfield (Tarim Basin, NW China) characterized by comprehensive two-dimensional gas chromatography, *Journal of Petroleum Science and Engineering* (2017), doi: 10.1016/j.petrol.2017.07.043.

C_5–C_{13} light hydrocarbons of crude oils from northern Halahatang oilfield (Tarim Basin, NW China) characterized by comprehensive two-dimensional gas chromatography

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Abstract: The Halahatang Oilfield in the Tabei Uplift of the Tarim Basin has substantial petroleum potential and contains many prolific commercial oil reservoirs. In this study, a total of 15 DST oils were sampled from the northern Halahatang oilfield, and their geochemistry of C_5–C_{13} light hydrocarbons (LHs) is characterized by two-dimensional gas chromatography (GC×GC). The concentrated clusters in the LH triangular diagrams and parent-daughter plots of the *n*-Heptane (%C_7) vs. ln (Cps/CHs) corroborating with the similar K_1 values (1.01–1.23), imply a high degree of compositional similarity and source affinity. The C_7 LHs show a predominance of *n*-heptane (30.07%–42.75%) and a nearly identical abundance of $MCyC_6$ (35.92%–45.85%), low I_{MCyC6} (methylcyclohexane index) value (35.92%–45.57%) and a moderate I_{CH} (cyclohexane index) value (25.92%–45.66%), demonstrating that they were typical marine oils mainly originated from a substantial amount of sapropelic organic matter mixed with a nearly equivalent amount of humic one. The LH maturity indexes, such as the heptane (H) ratio (17.80%–29.28%), isoheptane (I) ratio (1.25–2.15), $^{o}C_{temp}$ (113.72 ºC −124.63 ºC), methyladmantane index (MAI: 52.15%–63.65%) and equivalent vitrinite reflectance (1.1%–1.3% *R*o) indicate a high thermal maturity. The values of 3-ethyl-2-methylheptane to 3-methylnonane (MT_1: 0.91–3.65), 1,1,2,3-tetramethylcyclohexane to

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