

PS A New Exploration Direction of North in Tarim Basin, China: An Enlightenment from Geochemical Characteristics of Deep Natural Gases*

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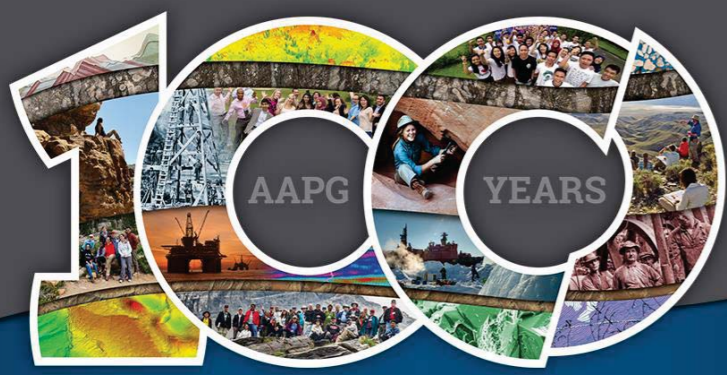
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Abstract

The Tabei Uplift is a focus exploration area of the northern Tarim Basin, China, and the western region of the Tabei Uplift (WRTU) is currently the focus area of oil and gas exploration. There are few studies on the WRTU; this research aims to provide useful information for further exploration in the field of development through unified research through the geochemistry studies of the deep gas in WRTU. The natural gas in WRTU mainly includes three kinds of genetic types: (1) oil-type gas, (2) coal-type gas, and (3) hybrid genetic gas.

The coal-type gas mainly concentrates in Yangta, Yudong and the 7 well block in Yingmai. The oil-type gas primarily amasses in Halahatang, Donghetang and Yingmai 2 well area. And the hybrid (or mixed) gas primarily concentrates in Yingmai 35, Yaha 2 and Yaha 4 wells area. The dry coefficient ($C1/\Sigma C1-5$) is generally low, an average of only 0.76-0.88, showing typical moisture. The presence of high concentrations of H₂S in the Halahatang northern region, such as Ha15, Ha16, is mainly due to the microbiological deterioration. The geochemical characteristics of gases and regional geological data show that there were two oil and gas migrations and filling directions in WRTU. The south hydrocarbon accumulation moved from the Manjiaer Depression, while the north part migrated mainly from the Kuche Depression. Two hydrocarbon charge directions suggest a great resource potential in WRTU, and WRTU would be a focus exploration area of the northern Tarim Basin.



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Theme 8 (Emerging Frontiers: Emerging Basins)

A new exploration direction of north in Tarim Basin, China: an enlightenment from geochemical characteristics of deep natural gases

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- The Tabei Uplift is a focus exploration area of north of Tarim Basin, China, and the western region of the Tabei Uplift (WRTU) is currently the focus area of oil and gas exploration. There are few study on the WRTU, this research aims to provide useful information for further exploration in the field of development through unified research.
- Through the geochemistry studies of the deep gas in WRTU. The natural gas in WRTU mainly includes three kinds of genetic types, which are oil-type gas, coal-type gas and hybrid genetic gas. Coal-type gas mainly concentrates in Yangta, Yudong and the 7 well block in Yingmai. Oil-type gas primarily amasses in Halahatang, Donghetang and Yingmai 2 well area. Mixed gas primarily concentrates in Yingmai 35, Yaha 2 and Yaha 4 wells zone (Fig.1).
- The dry coefficient (C1 /ΣC1-5) is generally low, an average of only 0.76-0.88, showing typical moisture. The presence of high concentrations of H₂S in Halahatang northern region, such as Ha15, Ha16, is mainly due to the microbiological deterioration (Fig.2).
- The geochemical characteristics of gases and regional geological data show that exist two oil and gas migrations and charge directions in WRTU. The south hydrocarbon accumulation move from Manjiaer depression; and the north part move mainly from Kuche depression. Two hydrocarbon filling directions suggest a great resources potentiality in WRTU, and WRTU would be a focus exploration area of north in Tarim Basin(Fig.3).

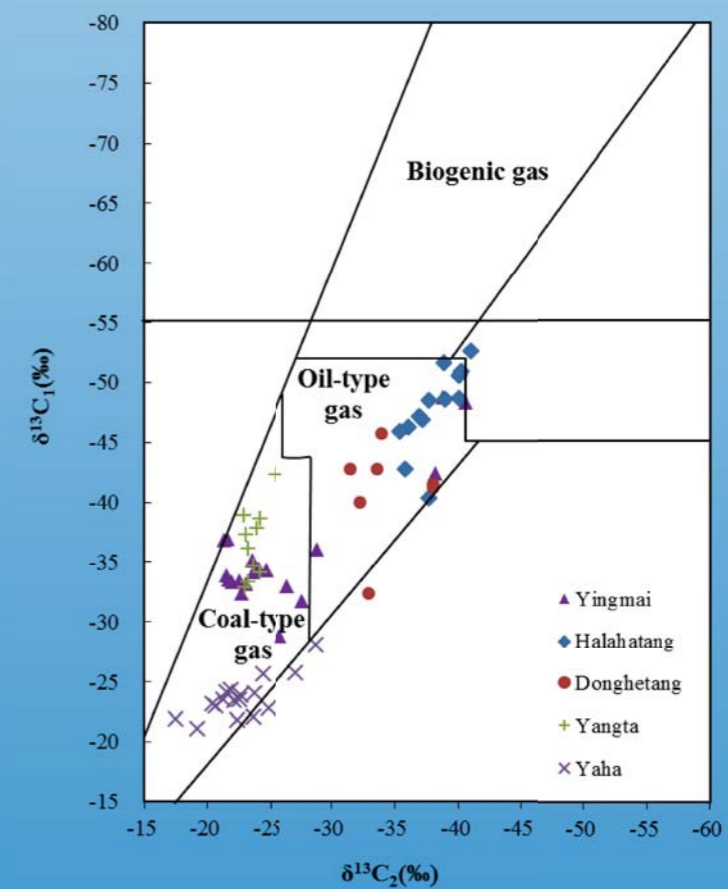


Fig.1 A plot for judging organic alkane cause with carbon isotope (Dai, modified).

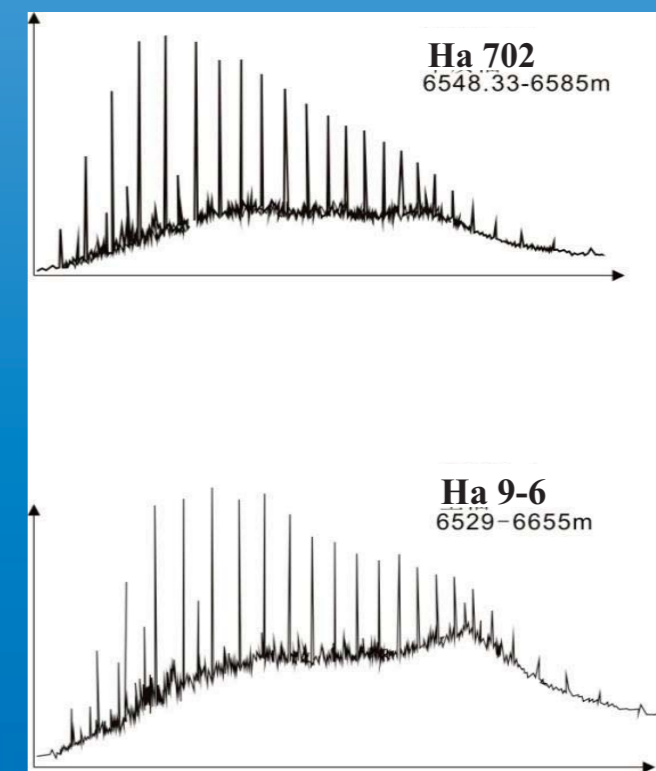


Fig.2 A meteorological chromatogram of Halahatang saturated hydrocarbon, the baseline drum package shows the biodegradation affect to the oil.

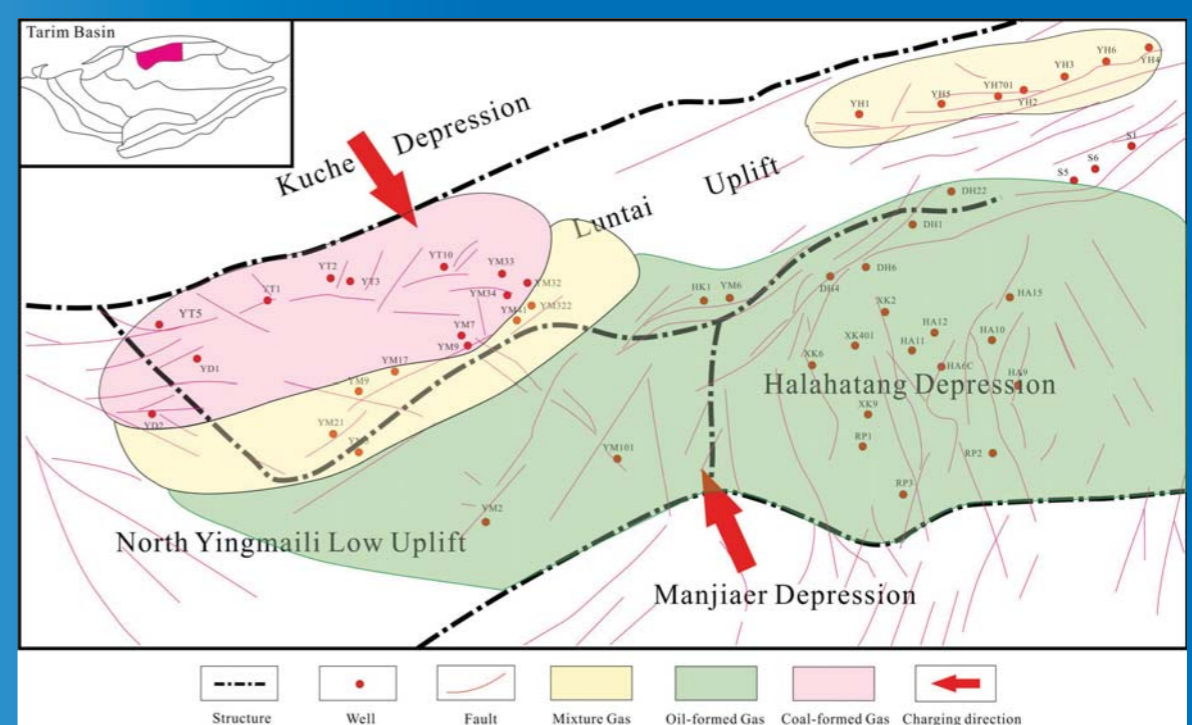


Fig.3 Geochemical characteristics and filling directions of natural gases.



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