

塔里木盆地海相石油的真实勘探潜力*

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Abundant oil and natural gas is embedded in Palaeozoic strata of the Tarim Basin in which reservoirs are buried at the depth about 5500 ~ 10000m. The phase states of hydrocarbon fluids in depth or the depth where mass liquid oil lost is a concerned theoretical question, and the question that marine facies in the Tarim Basin rich in gas or oil related to the future deliverability plan of Tarim oil field. We studied the thermal stability of oil in the Tarim Basin, especially researched the compensating effect of low geothermal gradient and quick deep burial process, considered that the depth where oil cracking began is at 9000 ~ 10000m or deeper, and the correspondent reservoir temperature is higher than 210°C, a mount of oil may exist above this depth. Though the research of key geosciences problem of hydrocarbon migration and accumulation, it demonstrated that hydrocarbon mainly accumulated in Late Hercynian stage in the platform area, and hydrocarbon generated from source rocks are primarily charged into steadily

1 引言

中国 (Bor y *et al.*, 1988; Ungerer *et al.*, 1988; Behar *et al.*, 1992; Horsfield *et al.*, 1992; Kuo and Michael, 1994; Schenk *et al.*, 1997; Tsuzuki *et al.*, 1999; Hill *et al.*, 2003; Tian *et al.*, 2007),

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中, Pan *et al.* (2010) 石 方 石 1°C Ma, 5°C Ma 10°C Ma

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2.2 原油的性质与组成

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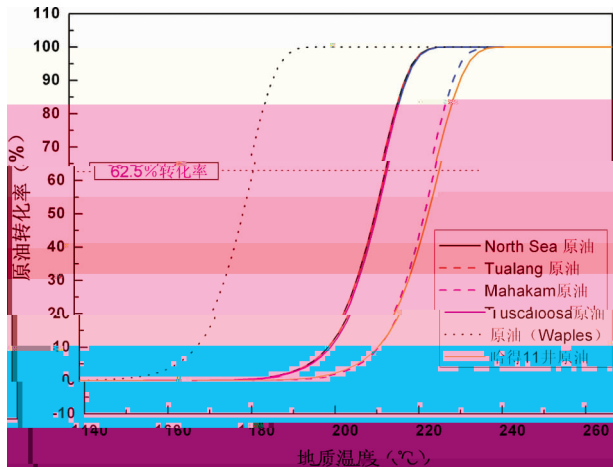


图2 油地 (2°C Ma) (H 11 油塔里求哈逊油田油)

Fig.2 Geological deduces of different crude oil cracking (2°C Ma) (H 11 oil is from Hadexun oil field in Tarim Basin)

$- \ln d_t, \ln k_{-1}, E_a - T, \ln A \leftrightarrow \ln t, E_a - T, \ln x, \ln A$ 。要样 (样), 低地用长埋。样, 高, 油中油, 短内完, 必要持续埋。

塔里木盆地哈逊油 (E_a = 59.8 kcal/mol, A = 2.13 × 10¹³ s⁻¹) (何坤, 2011), 一种油 (油中独立油消失限, GO = 3200 或 5000 scf bbl, 油 51 或 62.5%) (McCain and Bridges, 1994; Hunt, 1996; Waples, 2000) 要地 (3)。

Table 3 Geological times needed for abundant crude oil cracking in different temperatures of Hadexun oil field in Tarim Basin

地 (°C)	或 (Ma)	(Ma)	
		(51)	(62.5)
100	8.09 × 10 ⁷	9.92 × 10 ⁷	
150	5.86 × 10 ³	7.18 × 10 ³	
180	52.8	64.7	
190	12.6	15.4	
200	3.18	3.90	
	1	196.4	199
	2	100.8	102.0
(°C Ma)	3	68.2	69.0
	5	41.3	41.8
	10	21.0	21.1

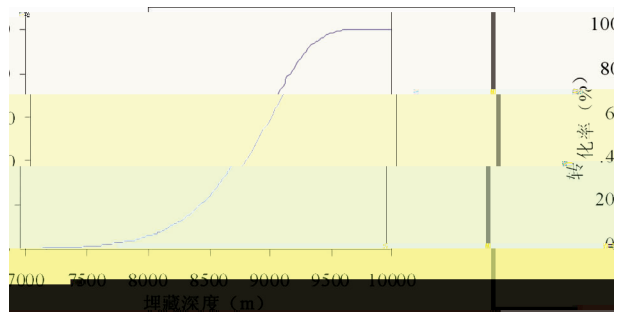


图3 塔里木盆地海油埋曲线

Fig.3 Transformation ratio curves of Tarim Basin marine oil cracking by different depth

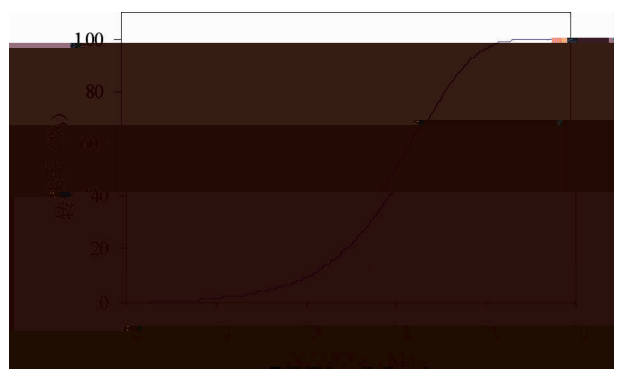


图4 埋10000m塔里木盆地地区海油关

Fig.4 The relationship between transformation ratio of marine oil cracking and time in Tarim Basin buried at the depth of 10000m

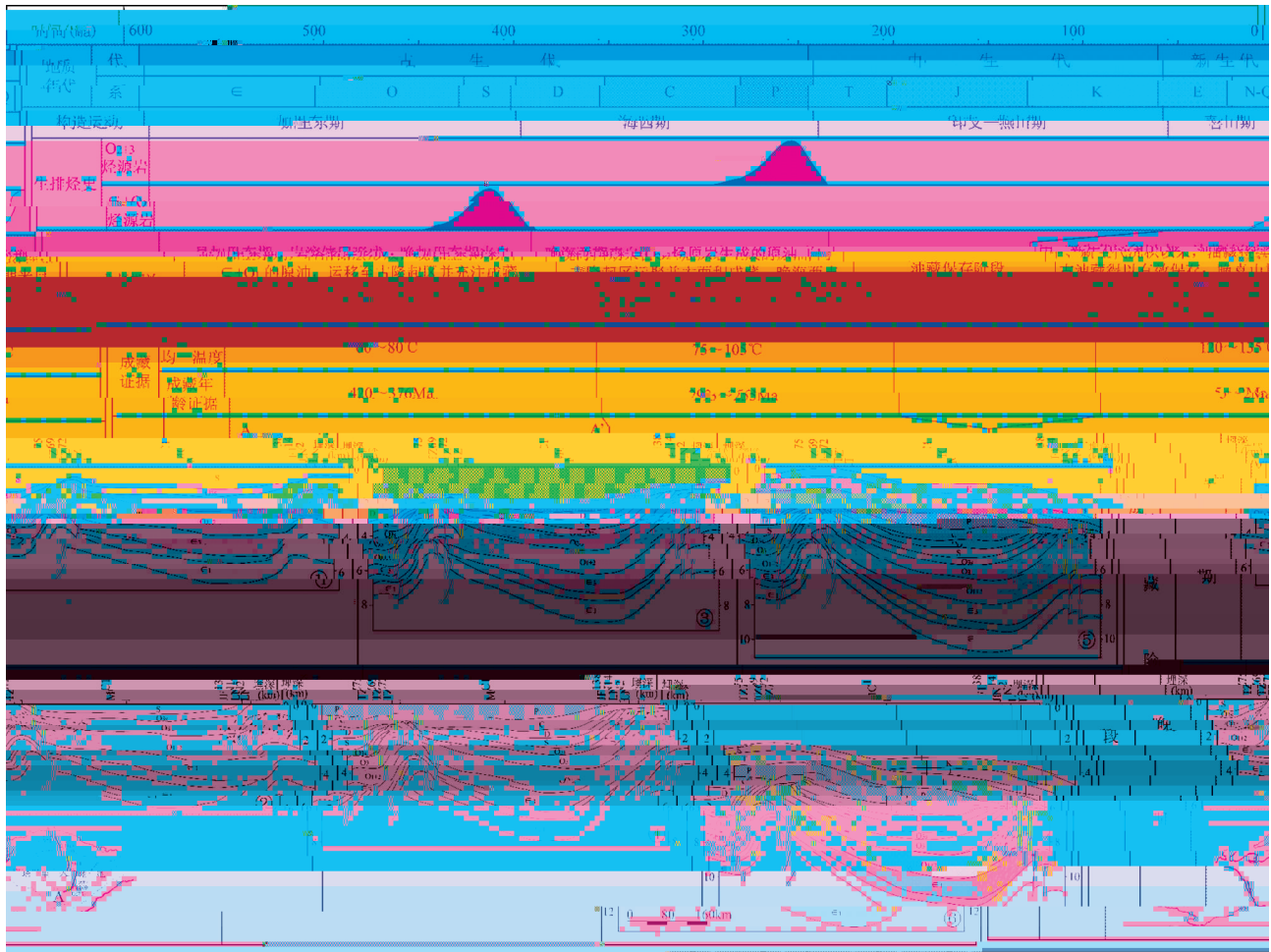
塔里木盆地地梯 20°C 1000m, 埋 5Ma, 7000m 埋 160°C 油, 持续长, 会发生。油 180°C 埋, 51 52.8Ma; 一般持续埋 (2°C Ma), 样程, 要要 100Ma。正持续埋, 高埋更有利油。塔里木盆地、盆地发, 塔里木盆地盆区 5Ma 埋 (塔), 盆地山中埋, 盆地油程高, 长高埋有。根塔里木盆地埋, 。

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3.1 海相油气的来源与流体性质

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 和中、
 (,2004;Zhang *et al.* , 2000, 2002a, b, 2005;Hanson
et al. , 2000; Li *et al.* , 2010; , 2007;
 2011)。
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Fig.6 Comprehensive model of marine hydrocarbon accumulation in platform area of the Tarim Basin

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2009 2010

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3.2 成藏期次与成藏过程

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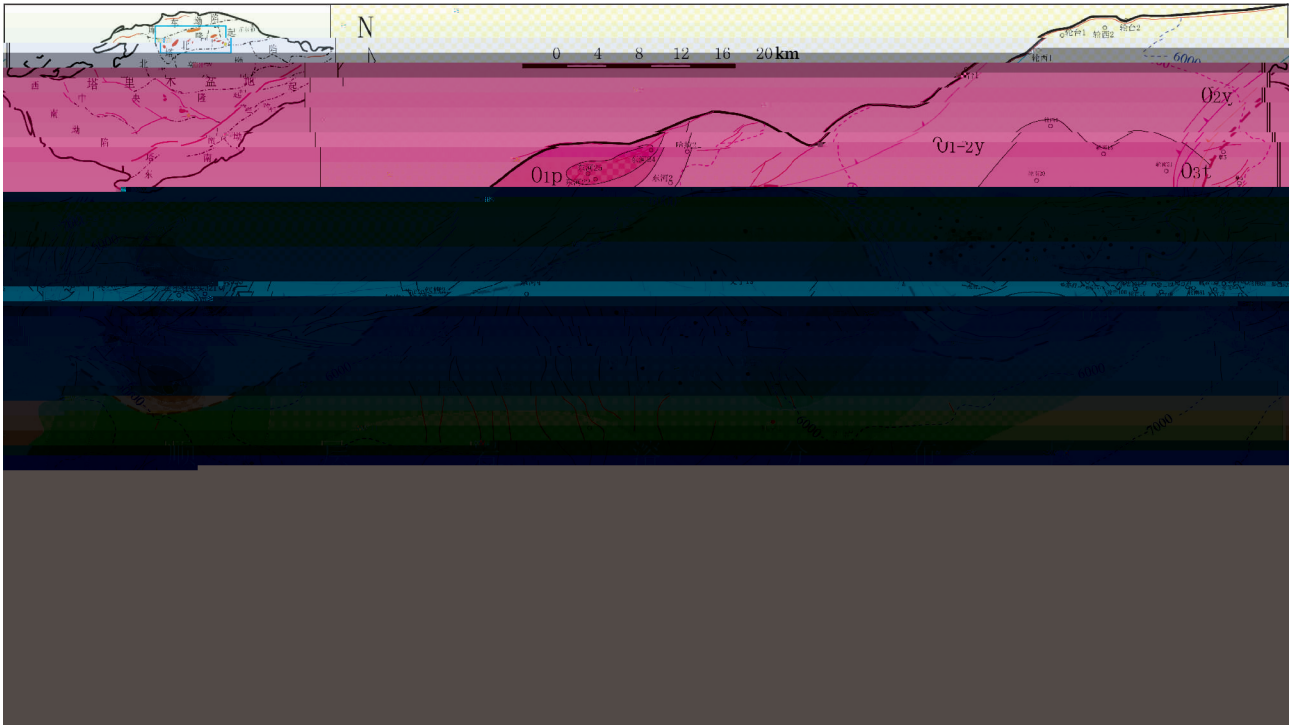


图7 塔里木盆地塔北地区奥陶溶厚值线图

Fig.7 Ordovician karst reservoir thickness contour histogram in Tabei area of the Tarim Basin

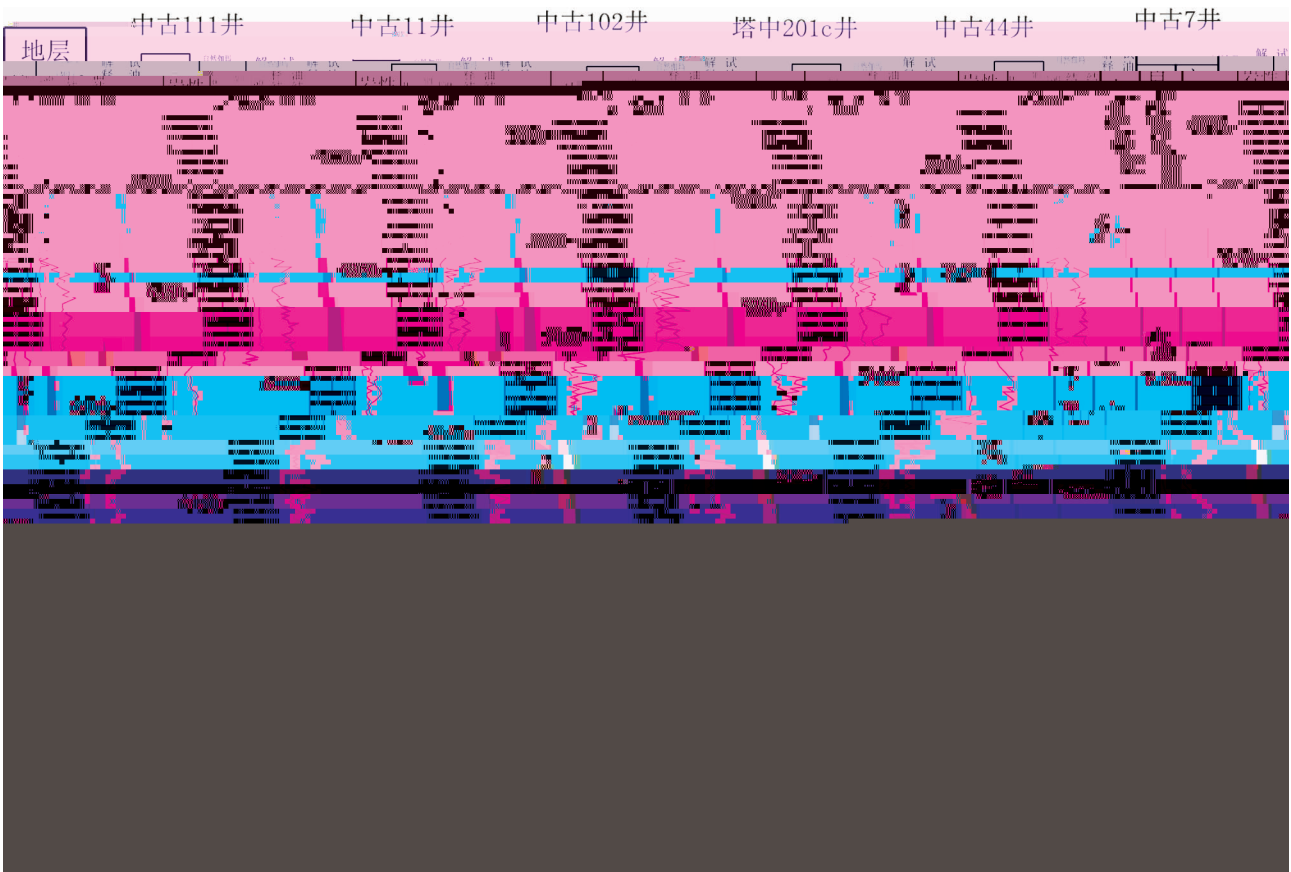
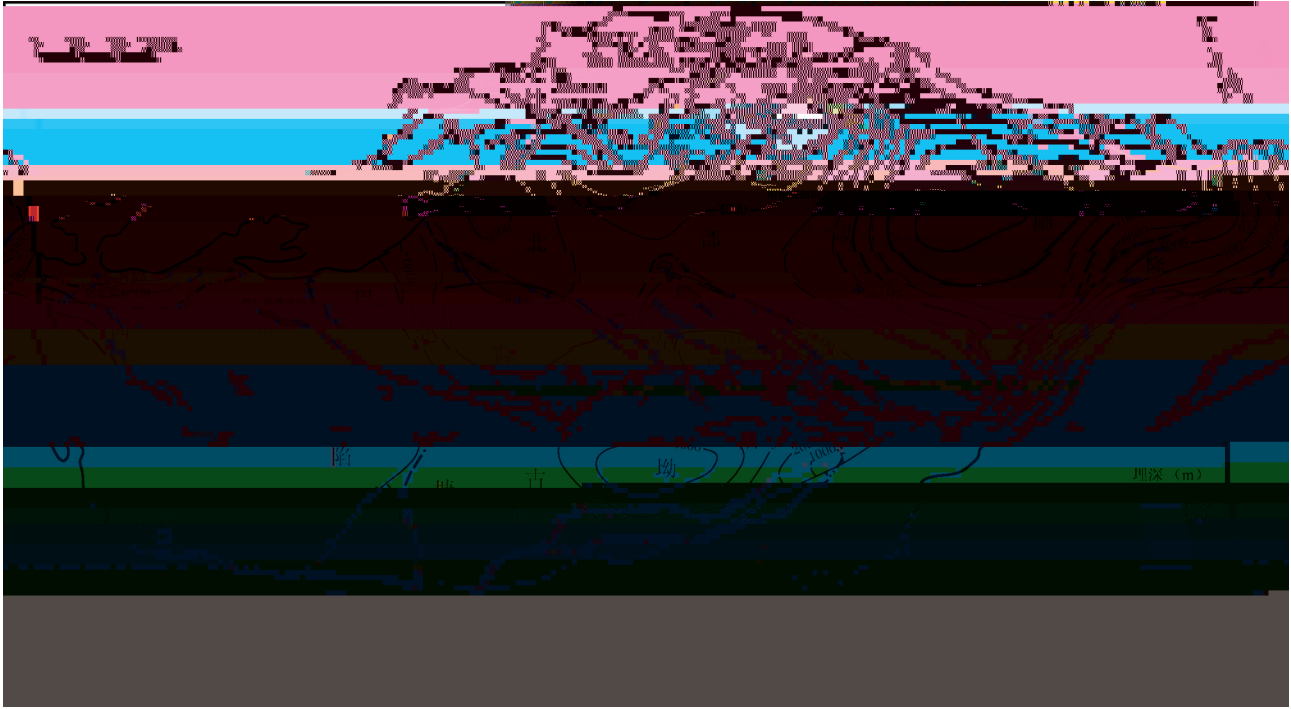


图8 塔里木盆地塔中奥陶鹰山间溶连井图

Fig.8 Interstratal karst reservoir well tie comparison of Yingshan Formation of Ordovician in Tarim Basin



A 10 . /O\$U! ^ 3 +! O [m@AW`m\$9` AA

Fig.10 Superposition figures of hydrocarbon distribution and bury depth contour in Late Hercynian of the bottom of Middle Ordovician in Tarim Basin



A 11 . /O\$U. ! #1\$<. , #2\$U=| , \$90` a bA

Fig.11 Multilayer oil and gas distribution overriding figures of Tazhong #left\$ and Tabei #right\$ in Tarim Basin

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5 油的 与保

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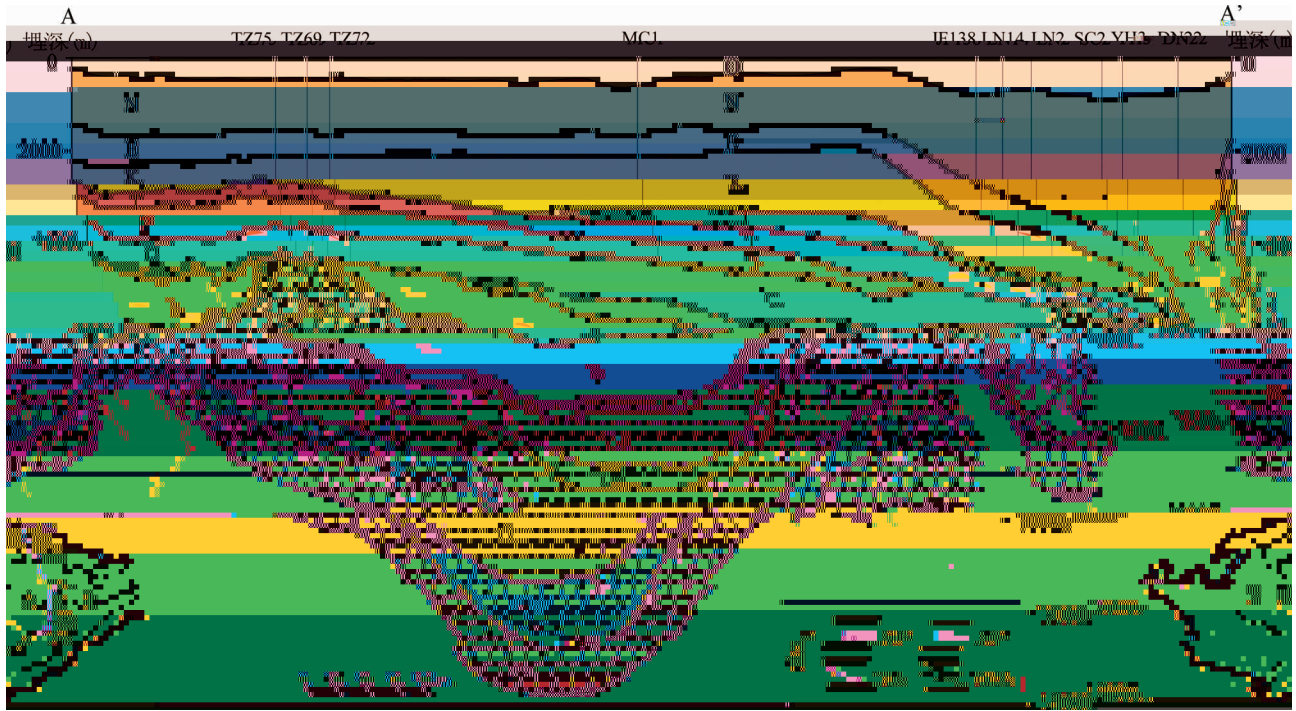


图 12 示意图
Fig.12 N-S hydrocarbon reservoir section of Tarim Basin

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7 结论

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