

---

---

## Enrichment Mode and Distribution Characteristics of Remaining Oil in Condition of Strong Driving by Bottom-Water

Longlong Li and Lin Pan

Key Laboratory of Tectonics and Petroleum Resource of Educational Ministry,  
China University of Geosciences, Hubei, Wuhan 430074, China

GCAGS Explore & Discover Article #00269\*

[http://www.gcags.org/exploreanddiscover/2017/00269\\_li\\_and\\_pan.pdf](http://www.gcags.org/exploreanddiscover/2017/00269_li_and_pan.pdf)

Posted October 30, 2017.

\*Article based on an abstract published in the *GCAGS Transactions* (see footnote reference below), which is available as part of the entire 2017 *GCAGS Transactions* volume via the GCAGS Bookstore at the Bureau of Economic Geology ([www.beg.utexas.edu](http://www.beg.utexas.edu)) or as an individual document via AAPG Datapages, Inc. ([www.datapages.com](http://www.datapages.com)), and delivered as a poster presentation at the 67th Annual GCAGS Convention and 64th Annual GCSSEPM Meeting in San Antonio, Texas, November 1–3, 2017.

---

---

### ABSTRACT

The reservoir of the 9th block of Lower Oil Formation of Triassic in Tahe Oilfield has a low-amplitude anticline and large bottom water. It has property of mesopore and high permeability and thickness of the reservoir is 18 meters. The reservoir lithology distribution are mainly calcareous interlayers and few argillaceous interlayers. The reservoir productd from February 2002 with depletion development. The current recovery degree is 24.51%, comprehensive water cut is 82.06%, and formation pressure maintenance level is 95%.

Since the reservoir development, the remaining oil distribution are very complex affected by the strong bottom water drive. By drilling new wells, remaining oil were found in the lower region but higher region which were flooded at the same place. We also found remaining oil within the single layers without any seepage boundary or high structure. It has become a core technique method to enhance oil recovery ratio by understanding the enrichment mode and distribution characteristics of remaining oil in condition of strong driving by bottom-water. Based on the fine geological research and development unit division, we studied the enrichment mode and distribution characteristics of remaining oil by combining dynamic test-data such as well production test, fluid producing profile test and PNN test. Then we verified it through numerical reservoir simulation. By summing up the enrichment control condition of remaining oil, there are three enrichment models of remaining oil in the large bottom-water reservoir which has been discovered. They are remaining oil controled by interlayers, remaining oil controlled by water dynamics planiform and remaining oil controlled by water coning segmentation.