

CSCD来源期刊(C库)

俄罗斯《文摘杂志》(AJ)收录

中文核心期刊

英国《科学文摘》(SA)收录

中国科技核心期刊

美国《石油文摘》(PA)收录

RCCSE中国核心学术期刊

美国《化学文摘》(CA)收录

北方期刊优秀奖

美国《剑桥科学文摘》(CSA)收录

辽宁省优秀期刊一等奖

万方数据库收录

ISSN 1006-6535  
CN 21-1357/TE



# 特种油气藏

## TEZHONG YOUQICANG

## SPECIAL OIL & GAS RESERVOIRS

NO. 3 2018



ISSN 1006-6535



9 771006 653187

06

第25卷 第3期 Vol.25No.3

主管: 中国石油天然气集团公司

主办: 中国石油辽河油田分公司

万方数据

特种  
油气藏

第二十五卷

第三期

(总第一百二十八期)

二〇一八年

# 特种油气藏

# 目次

1994年创刊(双月刊)  
第25卷第3期 总第128期  
2018年6月25日出版

编委会主任 张志东

技术顾问 马玉龙 主编 张方礼  
副主编 刘德铸  
常务副主编 王威

主管单位 中国石油天然气集团公司  
主办单位 中国石油辽河油田分公司  
承办单位 辽河油田分公司勘探开发研究院  
辽河油田分公司钻采工艺研究院  
编辑出版 《特种油气藏》编辑部  
印刷 辽河石油报印刷厂  
发行范围 国内外公开发行人  
国内发行 辽宁省盘锦市邮政局 邮发代号:8-173  
国外发行 中国国际图书贸易总公司  
(北京399信箱) 国外代号:BM1504  
地址 辽宁省盘锦市辽河油田分公司  
勘探开发研究院  
电话 0427-7823579;0427-7820262  
邮编 124010  
投稿网址 [www.sogr.com.cn](http://www.sogr.com.cn)  
中国标准连 ISSN 1006-6535  
续出版物号 CN 21-1357/TE  
广告许可 211100100026  
证号  
定价 26.00元/册  
责任编辑 林树龙 技术编辑 朱雅楠  
彩页编辑 孟凡勤 英文翻译 北京太科石油信  
息咨询服务公司

## SPECIAL OIL & GAS RESERVOIRS

Vol.25 No.3(Sum.No.128)Apr.2018

Superintended by CNPC

Sponsored by Liaohe Oilfield Company of PetroChina

Organized by E&D Research Institute of Liaohe Oilfield

Company of PetroChina

Drilling And Oil Production Technology Research

Institute of Liaohe Oilfield Company of PetroChina

Technical Advisors MA Yu-long

Editor-in-Chief ZHANG Fang-li

Associate Editor-in-Chief LIU De-zhu

Managing Associate Editor-in-Chief WANG Wei

Edited & Published by Editorial Office of Special  
Oil & Gas Reservoirs

Address E&D Research Institute of Liaohe Oilfield Company,  
Petro China,Panjin,Liao-ning,China,124010

Tel 0427-7823579 0427-7820262

Printing The Press of Liaohe Petroleum Newspaper Office

Overseas Distribution China International Book Trading  
Corporation P.O.Box 399, Beijing, China  
(Code, No.BM1504)

Subscription Rate(Overseas) US \$26 per copy  
US \$156 per year

### 地质勘探

- 强非均质致密砂岩气藏已动用储量评价新方法  
..... 张吉,史红然,刘艳侠,罗川又,朱亚军(1)  
川南-黔北地区龙潭组页岩气成藏条件分析  
..... 曹涛涛,邓模,刘虎,刘光祥,Andrew Stefan Hursthouse(6)  
基于机器学习的多地震属性沉积相分析  
..... 张艳,张春雷,成育红,高世臣,黄文辉(13)  
吐哈盆地塔朗组沉积特征及烃源岩潜力分析 ..... 韩祥霖(18)  
惠民凹陷夏口走滑正断层封堵能力差异性及其成因动力学机制  
..... 王亚琳(23)  
流体超压对西部凹陷天然气分布的控制作用 ..... 张宇(28)  
构造变形对页岩孔隙结构及吸附性的影响  
..... 章新文,李吉君,卢双舫,黄开展,阴建新(32)  
塔东南坳陷侏罗系康苏组沉积特征 ..... 赵一璇(37)  
川西北古生界烃源岩特征及生烃潜力评价  
..... 李琪琪,李斌,刘羿伶,郝悦琪,郑见超(44)  
德惠断陷沙一段凝灰岩储层特征及测井识别  
..... 周健,单玄龙,迟唤昭,岳庆友,苍正毅(50)  
安塞浅水三角洲前缘复合单砂体精细识别与划分  
..... 赵晔,师永民,刘新菊,万琳,冯博(56)  
黄河口凹陷古近系与新近系成藏主控因素与富集特征  
..... 刘成桢,姜平,姜治群(61)

### 油藏工程

- 低渗透油藏径向钻孔技术极限井距及应用  
..... 崔传智,吴忠维,郝永卯,杨勇,黄迎松(67)  
风城浅层超稠油蒸汽吞吐后期提高采收率技术  
..... 孙新革,赵长虹,熊伟,李凌铎,梁珊(72)  
稠油油藏组合蒸汽吞吐的分区方法 ..... 赵红雨(77)  
特低渗透油藏二氧化碳驱气窜影响因素及规律 ..... 李承龙(82)  
致密砂岩气藏高产液机理研究 ..... 丁景辰,曹桐生,吴建彪,齐亚云(87)  
考虑邻井干扰的页岩气多段压裂水平井数值试井方法 ..... 黄灿(92)  
玛131井区低渗透砂砾岩油藏水平井优化设计研究  
..... 黄兴龙,徐阳,曾彦强,徐尚鸿(97)  
渤中M油田低渗储层裂缝特征及对开发的影响 ..... 周军良(102)  
双模迭代技术在裂缝性碳酸盐岩油藏中的应用  
..... 高振南,霍春亮,罗成栋,徐静,李俊飞(108)  
渤海油田吸水能力影响因素与采出程度预测图版  
..... 申健,周文胜,潘岳,姚泽,沙雁红(113)  
大气顶油藏气窜规律与全寿命开发策略  
..... 房娜,刘宗宾,吕坐彬,程大勇,文佳涛(117)  
昆北油田优势通道成因及识别方法  
..... 胡亚斐,吴峙颖,李佳鸿,刘岩,谢琳(122)  
边底水气藏注二氧化碳泡沫控水技术研究 ..... 牛保伦(126)  
裂缝性油藏的注采模式研究 ..... 李云鹏,朱志强,孟智强,程奇,文佳涛(130)  
火驱高温氧化特征判识方法研究 ..... 程海清(135)  
海上稠油油藏弱凝胶调驱提高采收率技术  
..... 潘广明,张彩旗,刘东,吴金涛,李浩(140)  
页岩岩心气测孔隙度测量参数初探与对比  
..... 付永红,司马立强,张楷晨,王亮,邓茜(144)

### 钻采工程

- 天然气水合物酸化-自生热气开采技术研究  
..... 孙林,杨万有,李旭光,杨森(149)  
基于层次分析法的页岩气储层可压裂性评价研究  
..... 赖富强,罗涵,覃栋伏,夏炜旭,龚大建(154)  
钻井地质力学参数空间建模技术 ..... 杨同玉,吴超,吴继伟(160)  
海上高含水油田稳油控水技术研究及应用  
..... 刘新锋,费建杰,陈学江,刘正伟,靳甲斌(166)

### 其他

- 非线性统计法在油气资源评价中的应用  
..... 陆江,邓孝亮(170)

## CONTENTS

**Geologic Exploration**

- A New Method to Evaluate the Available Reserve of Tight Sandstone Gas Reservoir with Strong Heterogeneity ..... Zhang Ji, Shi Hongran, Liu Yanxia, Luo Chuanyou, Zhu Yajun(1)
- Shale Gas Accumulation Condition Analysis of Longtan Formation in Southern Sichuan–Northern Guizhou ..... Cao Taotao, Deng Mo, Liu Hu, Liu Guangxiang, Andrew Stefan Hursthouse(6)
- Multi-Attribute Seismic Sedimentary Facies Analysis Based on Machine Learning ..... Zhang Yan, Zhang Chunlei, Cheng Yuhong, Gao Shichen, Huang Wenhui(13)
- Sedimentary Pattern and Source–Rock Potential of Taerlang Formation in Turpan–Hami Basin ..... Han Xianglei(18)
- Sealing Difference of the Xiakou Strike–Slip Normal Fault in Huimin Sag and Its Dynamic Mechanism ..... Wang Yalin(23)
- Effect of Fluid Overpressure on the Natural Gas Distribution in the West Depression ..... Zhang Yi(28)
- Effects of Structural Deformation on Shale Pore Structure and Adsorption ..... Zhang Xinwen, Li Jijun, Lu Shuangfang, Huang kaizhan, Yin Jianxin(32)
- Sedimentary Pattern of Jurassic Kangsu Formation in Southeast Depression of Tarim Basin ..... Zhao Yixuan(37)
- Paleozoic Source–Rock Properties and Hydrocarbon Generation Potential in Northwest Sichuan ..... Li Qiqi, Li Bin, Liu Yiling, Hao Yueqi, Zheng Jianchao(44)
- Tuff Reservoir Properties and Logging Identification in the Sha1 Member of Dehui Fault Depression ..... Zhou Jian, Shan Xuanlong, Chi Zhaozhao, Yue Qingyou, Cang Zhengyi(50)
- Precise Identification and Classification of Composite Single Sandbodies in the Ansai Shallow Water Delta Front ..... Zhao Ye, Shi Yongmin, Liu Xinju, Wan Lin, Feng Bo(56)
- Main Controlling Factors and Enrichment Pattern of Paleogene and Neogene Hydrocarbon Accumulation in Huanghekou Sag ..... Liu Chengzhen, Jiang Ping, Jiang Zhiqun(61)

**Reservoir Engineering**

- Limit Spacing of Radial Drilling in Low–Permeability Reservoir and Its Application ..... Cui Chuanzhi, Wu Zhongwei, Hao Yongmao, Yang Yong, Huang Yingsong(67)
- Enhanced Oil Recovery in the Late Stage of Shallow Super–Heavy Oil Reservoir with Steam Huff–Puff in Fengcheng Oilfield ..... Sun Xinge, Zhao Changhong, Xiong Wei, Li Lingduo, Liang Shan(72)
- Zoning of Combined Steam Huff–Puff in Heavy Oil Reservoir ..... Zhao Hongyi(77)
- Gas Channeling Influencing Factors and Patterns of CO<sub>2</sub>–flooding in Ultra–Low Permeability Oil Reservoir ..... Li Chenglong(82)
- High Liquid Production Mechanism in Tight Sandstone Gas Reservoir ..... Ding Jingchen, Cao Tongsheng, Wu Jianbiao, Qi Yayun(87)
- Numerical Test of Multi–Stage Fractured Horizontal Shale Gas Well with Inter–Well Interference ..... Huang Cair(92)
- Horizontal Well Optimization and Design of Low–Permeability Glutenite Reservoir in Wellblock Ma131 ..... Huang Xinglong, Xu Yang, Zeng Yanqiang, Xu Shanghong(97)
- Fracture Properties of Low–Permeability Reservoir in the M Oilfield of Middle Bohai Sea and Its Impact on Development ..... Zhou Junliang(102)
- Application of Dual–Mode Iterative Technology in Fractured Carbonate Reservoir ..... Gao Zhenman, Huo Chunliang, Luo Chengdong, Xu Jing, Li Junfa(108)
- Influencing Factors of Water Intake and Recovery Degree Forecast Chart in Bohai Oilfield ..... Shen Jian, Zhou Wensheng, Pan Yue, Yao Ze, Sha Yan hong(113)
- Gas Channeling Pattern and Full–Life Development Strategy for Oil Reservoir with Large Gas–Cap ..... Fang Na, Liu Zonghin, Lyu Zuobin, Cheng Dayong, Wen Jiatao(117)
- Genesis and Identification of Dominant Channel in Kunbei Oilfield ..... Hu Yafei, Wu Shiyong, Li Jiahong, Liu Yan, Xie Lin(122)
- Water Control in the CO<sub>2</sub> Foal–Flooding Gas Reservoir with Bottom–Edge Aquifer ..... Niu Baolun(126)
- Injection–Production Pattern of Fractured Reservoirs ..... Li Yumpeng, Zhu Zhiqiang, Meng Zhiqiang, Cheng Qi, Wen Jiatao(130)
- High–Temperature Oxidation Identification in Fire–Flooding ..... Cheng Haiqing(135)
- Weak–Gel Profile–Control Flooding to Enhance Oil Recovery in Offshore Heavy–Oil Reservoir ..... Pan Guangming, Zhang Caiqi, Liu Dong, Wu Jintao, Li Hao(140)
- Preliminary Study and Comparison of Shale Core Gas–Porosity Test Parameters ..... Fu Yonghong, Sima Liqiang, Zhang Kaichen, Wang Liang, Deng Qian(144)

**Drilling & Production Engineering**

- Natural Gas Hydrate Acidizing–Self–Generated Hot–Gas Recovery ..... Sun Lin, Yang Wanyou, Li Xuguang, Yang Mia(149)
- Crushability Evaluation of Shale Gas Reservoir Based on Analytic Hierarchy Process ..... Lai Fuqiang, Luo Han, Qin Dongyou, Xia Weixu, Gong Dajian(154)
- Spatial Modeling of Drilling Geo–Mechanical Parameters ..... Yang Tongyu, Wu Chao, Wu Jiwei(160)
- Oil–Maintenance and Water–Control in Offshore High Water–Cut Oilfield ..... Liu Xinfeng, Fei Jianjie, Chen Xuejiang, Liu Zhengwei, Jin Jiabin(166)

**Other**

- Application of Nonlinear Statistics in Hydrocarbon Resource Assessment ..... Lu Jiang, Deng Xiaoliang(170)