

主管 中国石油天然气集团公司
主办 中国石油集团测井有限公司

主编 陆大卫
副主编 李剑浩

执行副主编 王环
编辑部主任 赵舒平

责任编辑 余迎
技术编辑 李隽
英文译审 高宝善

编辑出版 测井技术编辑部
通讯地址 陕西省西安市高新技术开发区
锦业二路丈八五路50号

邮编 710077
电话 029-88776025/88776327
传真 029-88776209

电子邮箱 cnpcwl@126.com
网址 http://www.cnpcwl.com

排版印刷 陕西天丰印务有限公司
国内发行 自办发行
国外发行 中国国际图书贸易总公司
(北京399信箱 100044)

国外发行代号 BM 4233
中国标准 ISSN 1004-1338
连续出版物号 CN 61-1223/TE
广告经营许可证 6100004000024

每期定价 35.00元
全年定价 210.00元
出版日期 2017-06-20

WELL LOGGING TECHNOLOGY

Bimonthly • Started in 1977

Vol.41 No.3 2017 Total 251

Editor in Chief: Lu Dawei

Deputy Editor in Chief: Li Jianhao

Executive Editor in Chief: Wang Huan

Director: Zhao Shuping

Sponsor:

China National Petroleum Corporation
China Petroleum Logging CO., LTD.

Editor and Publisher: Editorial Department

WELL LOGGING TECHNOLOGY

No.50 Zhangba 5 Road, Jinye 2 Road, Hi-tech Industries
Development Zone, Xi'an, Shaanxi 710077 China
Tel: 86-29-88776025/88776327

Fax: 86-29-88776209

E-mail: cnpcwl@126.com

Website: http://www.cnpcwl.com

Printer: Shaanxi Tianfeng Printing CO.,LTD.

Overseas Distributor:

China International Book Trading Corporation
P.O.Box 399, Beijing 100044 P.R.China

Distributing Code No.: BM4233

俄罗斯油气开采及测井工程服务现状	侯学理 陆大卫(253)
·方法研究·	
随钻方位声波发射换能器性能数值模拟分析	陈俊圆 唐晓明 苏远大 刘玉凯 许松 庄春喜(256)
反射声波测井波场分离方法研究	宫昊 陈浩 何晓 卫建清 王秀明(260)
钻遇断层水平井地层模型的阵列感应测井响应特性数值模拟	仵杰 李宇腾 付晨东 董丽新 姚东华(266)
基于遗传算法的核磁共振测井反演算法布点方式	沈涛 石晓龙 陈智华(272)
·处理解释·	
中东×区生物碎屑灰岩储集空间测井表征方法	刘家雄 范宜仁 朱大伟 邓少贵 韩玉娇 李格贤 巫振观 高源(278)
自定义响应方程的测井最优化处理方法	冯周 李心童 武宏亮 王华锋 冯庆付 王克文(286)
基于自然电位计算泥质砂岩储层孔隙度的方法	任杰 翟芳芳 李凤玲 陈彬(292)
基于限定对比度直方图均衡的超声测井图像增强方法	付青青 杨立华 付建栋 吴爱平(296)
碳酸盐岩三矿物岩石组分识别模型的建立与应用	李晓辉 吴庆岩 庞福基(301)
·测井仪器·	
三探测器密度测井仪测量套管厚度和水泥环密度	李晓龙 肖承文 黄若坤 朱雷 宋琪 康晓楠(305)
微柱型聚焦测井仪测井响应模拟及应用	李智强 杨志强 姚文华 夏济根 张克(310)
基于FPGA的数字化多道脉冲幅度分析器的设计	罗翔 岳爱忠 何绪新 王茂林 何子忠 林岩栋(315)
·非常规油气评价·	
人工蜂群最优测井解释方法在致密砂岩储层评价中的应用	孙茹雪 潘保芝 石玉江 张海涛 杨晓明 李晓(320)
常规测井资料在致密砂岩储层产能评价中的应用	成家杰 王文文 侯振学 钱玉萍(325)
元素俘获测井在库车深层致密砂岩中的应用	康晓楠 肖承文 信毅 周磊 陈强 李晓龙 罗伟平(331)
电成像测井在莺琼盆地大型重力流储集体勘探中的应用	何小胡 王亚辉 焦详燕 何卫军 董贵能(336)
基于分形理论的低渗透砂岩储层孔隙结构评价方法	闫建平 何旭 耿斌 李兴文 郭红梅(345)
·综合应用·	
基于测井信息的致密层油射孔优化选层方法研究	夏宏泉 文晓峰 冯春珍 王伟(353)
高分辨率随钻电阻率成像测井在四川盆地碳酸盐岩储层的应用	王邦伟 张树东 吉人 赖剑(358)
VTI各向异性地层偶极横波测井及其应用	古锐瑶 许松 唐晓明 苏远大 庄春喜 李盛清(364)
基于3D油藏地质模型构建一体化测井解释平台技术研究	王卫(369)
·射孔技术·	
桥塞与分簇射孔联作工艺及其在川渝页岩气区的应用	王海东 唐凯 陈锋 郭廷亮 任国辉 代传刚 赵欣迪(373)
等孔径射孔弹数值模拟与试验研究	鲁坤 李必红 赵云涛 王喜 段嘉庆 周明(378)
·技术信息·	
可回收双遥传随钻测量系统 BlackStar II	(277)
激光套损检测系统 BEMIS™	(319)
CycloLog 测井软件	(363)
井旁远探测纵波成像测井技术(DCWI)	(368)

CONTENTS

• Methodology •

- Numerical Simulation and Analysis of LWD Azimuthal Sonic Transmitter's Performance
 CHEN Junyuan, TANG Xiaoming, SU Yuanda, LIU Yukai, XU Song, ZHUANG Chunxi (256)
- Research on Improved Wave Separation Method for Single-well Imaging
 GONG Hao, CHEN Hao, HE Xiao, WEI Jianqing, WANG Xiuming (260)
- Numerical Simulation of Response Characteristics to the Array Induction Logging in the Horizontal Well Penetrating Faults
 WU Jie, LI Yuteng, FU Chendong, DONG Lixin, YAO Donghua (266)
- T₂ Stationing Method of Nuclear Magnetic Resonance Logging Inversion Algorithm Based on the Genetic Algorithm
 SHEN Tao, SHI Xiaolong, CHEN Zhihua (272)

• Log Interpretation •

- Calculation Method of Bioclastic Limestone Reservoir Space Using Log Data in the Middle East Area × District
 LIU Jiaxiong, FAN Yiren, ZHU Dawei, DENG Shaogui, HAN Yujiao, LI Gexian, WU Zhenguan, GAO Yuan (278)
- Logging Optimization Processing Method with User-defined Response Equation
 FENG Zhou, LI Xintong, WU Hongliang, WANG Huafeng, FENG Qingfu, WANG Kewen (286)
- Calculation Method of Shale Sandstone Reservoir Porosity Based on SP Log
 REN Jie, ZHAI Fangfang, LI Fengling, CHEN Bin (292)
- Method for Ultrasonic Logging Well Image Enhancement Based on Contrast Limited Adaptive Histogram Equalization
 FU Qingqing, YANG Lihua, FU Jiandong, WU Aiping (296)
- Building and Application of Three-mineral Rock Components Identification Model for Carbonate
 LI Xiaohui, WU Qingyan, PANG Fuji (301)

• Logging Instrument •

- Measuring Casing Thickness and Density of Cement Sheath with Three-detector Density Logging Tool
 LI Xiaolong, XIAO Chengwen, HUANG Ruokun, ZHU Lei, SONG Qi, KANG Xiaonan (305)
- Numerical Simulation and Application of Micro-cylindrically Focused Logging Responses
 LI Zhiqiang, YANG Zhiqiang, YAO Wenhua, XIA Jigen, ZHANG Ke (310)
- Design of Digital Multi-channel Pulse Amplitude Analyzer Based on FPGA
 LUO Xiang, YUE Aizhong, WANG Maolin, HE Xuxin, HE Zizhong, LIN Yandong (315)

• Unconventional Reservoir Evaluation •

- Application of Artificial Bee Colony Optimization Log Interpretation Method to Tight Sandstone Reservoir Evaluation
 SUN Ruxue, PAN Baozhi, SHI Yujiang, ZHANG Haitao, YANG Xiaoming, LI Xiao (320)
- Application of Conventional Log Data to Productivity Evaluation of Tight Sandstone Gas Reservoirs
 CHENG Jiajie, WANG Wenwen, HOU Zhenxue, QIAN Yuping (325)
- Applications of Elemental Capture Spectroscopy Log to Sandstone Reservoirs with Deep Layer of Kuqa
 KANG Xiaonan, XIAO Chengwen, XIN Yi, ZHOU Lei, CHEN Qiang, LI Xiaolong, LUO Weiping (331)
- Application of Electrical Imaging Logging in Exploration of Large Deep-water Gravity Flow Deposits in Yingqiong Basin
 HE Xiaohu, WANG Yahui, JIAO Xiangyan, HE Weijun, DONG Guineng (336)
- Models Based on Fractal Theory to Assess Pore Structure of Low Permeability Sand Reservoirs
 YAN Jianping, HE Xu, GENG Bin, LI Xingwen, GUO Hongmei (345)

• Applications •

- Optimal Selecting Interval Method of Tight Oil Reservoir Perforating Based on Well Logging Information
 XIA Hongquan, WEN Xiaofeng, FENG Chunzhen, WANG Wei (353)
- Application of Microscope High Resolution LWD Resistivity Image Logging in Carbonate Reservoirs in Sichuan Basin
 WANG Bangwei, ZHANG Shudong, JI Ren, LAI Jian (358)
- Using Dipole-shear Wave Logging to Characterize VTI Property and Its Application to Stress Estimation in VTI Formations
 GU Ruiyao, XU Song, TANG Xiaoming, SU Yuanda, ZHUANG Chunxi, LI Shengqing (364)
- Technology of Integrated Log Interpretation Platform Based on 3D Reservoir Geological Model WANG Wei (369)

• Perforation •

- Technology of Bridge Plug and Multi-cluster Perforation and Its Application in Shale Gas of Sichuan and Chongqing Area
 ... WANG Haidong, TANG Kai, CHEN Feng, GUO Tingliang, REN Guohui, DAI Chuangang, ZHAO Xindi (373)
- Numerical Simulation and Experimental Research on Equal Hole Shaped Charge
 LU Kun, LI Bihong, ZHAO Yuntao, WANG Xi, DUAN Jiaqing, ZHOU Ming (378)