

钻探工程

2024年第51卷增刊（总第448期）

2024年10月出版

双月刊

目次

【综述】

- 特深井钻杆柱材料的研究现状与关键技术····· 刘长硕, 王瑜, 李立鑫, 覃泳杰, 王显林, 王翠竹 (1)
- 几种基于随钻参数地层识别方法的对比分析····· 张航盛, 孙平贺, 朱建新, 邓盈盈, 曹函, 张晨, 张鑫鑫, 蒲英杰 (10)
- 水射流技术在海洋水合物钻采过程中的应用研究进展····· 邓欣颖, 潘栋彬, 李婕, 陈晨, 余渝, 段浩然 (16)
- 深部能源开采中多场耦合模型研究现状——以干热岩为例····· 李翰林, 曹函, 朱峻生, 吕岩, 朱凌 (24)
- 以新质生产力助力钻探技术装备创新发展应用再作为····· 张永勤, 李小洋, 李宽, 李凯舟, 陈石, 魏益强, 王京兵 (29)
- 水利水电工程勘察钻机应用现状及发展趋势····· 周治刚, 黄帆, 姚震桐, 丁晔, 黄炎普, 夏骏, 王昶宇 (35)

【钻探理论与方法】

- 载体保护下诱导碳酸钙对水泥砂浆微裂隙的修复作用····· 郑明明, 张亚伟, 胡云鹏, 周洪, 李之军, 姚雷, 王治林, 白世卿 (42)
- 极地深层热水钻回水软管伴热功率数值模拟研究····· 李小冰, 李冰, 李亚洲, 刘艺倬, 张在兴 (51)
- 基于钻进参数实时预测土体力学性质的 Stacking 集成模型····· 李谦, 周治刚, 邓光宏, 刘绪勇, 丁晔 (61)
- 基于专家知识和参数阈值的钻探孔内事故判别准则研究····· 杨科, 蒲春, 廖麟祥, 曹灶开 (70)
- 提钻取心岩心堵塞形态分析与防堵方法探讨····· 曹龙龙, 张恒春, 闫家, 吴纪修, 赵俊杰 (78)
- 近钻头随钻测量系统天线参数试验优化研究····· 韦海瑞, 吴川, 朱芝同, 沈显鸿, 廖宇豪, 刘阔, 贾明浩, 邵玉涛, 刘广 (85)
- 基于非球形岩屑的高压 CO₂ 喷射钻井携岩试验研究····· 杨显鹏, 涂杰, 蔡灿, 曾琪, 魏怀洲, 蒲治成, 陈浩 (90)
- 钻井液旋转粘度测试中双圆筒力矩分析····· 李月, 江欣 (96)
- 基于图像识别技术的固井质量评价方法研究····· 邹卓峰, 张宝权, 李辉, 王建华, 王海涛, 管震 (104)
- 离子型稀土开采过程中导流井井周矿体颗粒脱落运移临界流速研究····· 周扬, 潘栋彬, 曾云霜 (112)

【钻探技术与装备】

- 地热储层损害修复与增产技术研究····· 卢玮, 张晗, 申云飞, 王金亮, 顾超, 白晨 (117)
- 贵州裸露岩溶地下河系统污染通道识别钻探技术····· 陈涛, 李强, 江峰, 赵华宣, 陈浩, 贾玉川, 王若帆 (124)

可控局部热熔钻头的研制与应用试验·····	巩建雨, 王久全, 杨彪, 童健活, 曹昌兴, 万代进 (132)
海洋自适应伸缩绳索取心钻探工艺研究及应用·····	殷国乐, 齐立强, 王林清, 秦如雷, 马汉臣 (138)
绳索取心振动防堵钻具的试验研究·····	王志祥, 韩庆, 欧涛 (143)
液力驱动无绳索取心系统泥浆正反循环切换机构设计及其流体通道优化·····	马梓熠, 李之军, 刘阔, 龙爱国, 李越阳, 郭光鼎, 张浩 (150)
深层煤层气保压取心技术及应用研究·····	赵义, 刘海龙, 李春, 张建元, 沈立娜, 吴海霞, 汪成龙 (158)
自激振荡旋转冲击钻进工艺应用研究·····	惠航, 王虎, 陈新勇, 陈登齐, 常兴仁, 李勇 (166)
“四合一”钻具在定向钻井工程中的应用分析·····	曹永斌, 杨德全, 杜斌, 杨小兵, 马健, 李蓓, 李岩 (172)
套管定向钻井锁定器设计与仿真分析·····	朱明享, 宋刚, 张欣, 陈晓君, 崔淑英, 田英英, 牛庆磊, 韩泽龙, 赵明 (178)
岩心钻探振动拔管器的研制及在卡埋钻处理中的应用·····	宋继伟, 冉飞, 田鹏辉, 方青, 朱斗圣 (187)
无固相冲洗液防塌护壁性能强化改进试验研究·····	史铭, 杨亚平, 张席芝, 雒焕祯, 谭义军, 蒋炳, 张统得 (191)
一种储层保护用酸溶性纤维的合成及现场应用·····	宋延超 (196)
表面改性玻化微珠增强地热保温固井水泥研究·····	曹灶开, 谭慧静, 廖麟祥, 罗龙, 杨科, 左悦 (202)
无人机吊运模块化钻机技术研究与应用·····	王文彬, 龙安, 吴荣华, 李卫武, 朱贤, 朱森林 (208)
HRD800F 型水平岩心钻机动力头的研制·····	林下斌, 黄海游, 李勇 (216)
绳索取心钻进钻杆防垢除垢系统的研究·····	赵建刚, 许云博, 石凯, 李慧想, 王雪竹, 魏瑞, 李进 (222)
RN254 型铁钻工冲扣钳设计与力学分析·····	许本冲, 王林清, 刘凡柏, 李文秀 (226)
基于 Profinet 与 S7-1200 PLC 的 RN254 型铁钻工电控系统的研发与应用·····	刘晓林, 王林清, 许本冲, 刘凡柏 (231)
RMR 举升泵组管线切换系统设计·····	刘晓林, 姜宇昊, 高洁云, 王林清, 殷国乐 (238)
基于 LabVIEW 和 PLC 的 Modbus RTU 通信的 RMR 水下泵组监控系统设计·····	刘晓林, 高洁云, 陈浩文 (245)
基于图像识别的深海 RMR 液位测控系统设计与研究·····	高洁云, 陈浩文, 秦如雷, 刘晓林 (252)
轻便式气囊隔离随钻压水试验器的研制与应用·····	周治刚, 黄帆, 丁晔, 黄炎普, 夏骏, 王昶宇 (258)

【工程实践与应用】

青海省茫崖市马海地区钾矿绿色勘查措施·····	刘海声, 胡咏琪, 窦斌, 徐国辉, 赵博楠, 苏延鹤 (263)
绿色勘查技术在湖南省幕阜山地区钻探工程中的应用与实践·····	方国庆, 潘德元, 王杰, 蔡隽, 贺前平, 徐秋文, 王虎 (269)
察瓦龙深井接地极地质调查绿色钻探技术·····	胡文辉, 李奋强, 王穗, 宋建贵, 邓拓, 粟琼玉, 叶见玲 (275)
青海省某盐湖浅层卤水矿岩心钻探技术·····	刘蓓, 杨永顺, 周梓豪, 李雪宁, 张雄, 揣金乐 (280)

甘肃杨岭铁矿区复杂地层岩心钻探技术·····	李增梁, 陈永平, 穆元红, 杨海云, 刘海声 (287)
东北寨金矿复杂地层综合钻探施工技术·····	张旭, 李中明, 王泽, 肖尧, 杨芝广, 刘晒搏 (292)
宁夏中卫深井煤炭勘探区钻探工程冬季施工技术·····	何玉云, 曹学斌, 熊正强, 訾兵, 张学进, 薛山江, 何林, 杨文杰 (299)
模块化全液压钻机在页岩地层钻探施工中的应用·····	王太平, 蒋光旭, 向成, 周祥卫, 魏义斌 (303)
背包钻机在黑土地地表基质调查中的应用研究·····	李玉泽, 武杰, 孙肖, 苏佳鑫, 郭广平, 韩涛, 杨亚谦, 张强 (307)
兰陵铁矿小口径定向钻进PDC钻头设计与应用·····	黄建强, 张云龙, 黄宝胜, 冯超臣, 杜焱森, 张恒春, 董向宇 (313)
湖南明月峰地区水力割刀使用问题研究·····	孙熙宇, 易军平, 沈应航, 贾明浩 (318)
花草滩矿区+304孔易降解强抑制防塌聚合物冲洗液体系研究与应用·····	雷永胜, 纪卫军 (322)
岩心钻探漏失地层水泥堵漏技术的实例分析与研究·····	隗德祥, 高金华, 刘维平, 孙健越 (327)
鄂西地区颧鹤页3井钻探施工技术·····	王杰, 潘德元, 蔡隽, 王稳石, 李海, 方国庆, 贺前平, 李凯 (332)
柳州地区页岩气地质调查井钻探技术研究与应用·····	尹欣, 蒙发强, 李明星, 李超平, 胡巍 (341)
泡碱处理粘卡在皖毫地1井的应用·····	赵洪波, 齐治虎, 岳伟民, 蔡正水 (348)
渤海油田复杂井侧钻设计方法研究与实践·····	陈立强, 于长广, 王宇昕, 唐捷, 王赞, 陈国宏 (352)
古龙页岩油GY15-Q8-H1井优化二开实践与认识·····	潘子真 (358)
长庆区域随钻堵漏技术研究与应用·····	孙欢, 朱明明, 石崇东, 刘朝峰, 屈艳平, 孙艳, 杨帆 (364)
张集煤矿多分支井强封堵防塌钻井液体系研究及应用·····	刘恒, 杨胜春, 纪卫军 (368)
超深水超浅层探井开阔海域电缆测井技术与实践·····	代锐, 罗鸣, 吴艳辉, 马传华, 李文拓, 黄洪林, 尹建喜, 李军 (373)
平湖油田高温大位移井尾管固井技术实践·····	田军政 (378)
南华北盆地太康隆起地热调查尉热1井钻井技术·····	郭充, 朱怀亮, 杨忠彦, 王丽妍, 蔡金盟, 李文龙, 林圣明, 张钰琪 (384)
天津地区地热定向井钻井工艺优化及应用·····	苏小飞, 杨忠彦, 董路飞, 孙玉东, 蔡金盟 (392)
舞阳盐矿水平对接井近点反拉施工技术·····	蒋祥光, 严伟超, 洪毅, 杨怡, 叶辉兵, 陈维保, 万宇航 (398)
水平定向钻进技术在青海钾盐矿开采中的应用研究·····	韦海瑞, 马琳, 刘阔, 贾明浩, 吴礼林, 朱芝同, 邵玉涛, 刘广, 贾炜 (404)
北徐楼煤矿超大口径投料孔施工技术·····	石天峰, 王凯, 罗庆银, 赵元强 (411)
清平磷矿采空区与岩溶富水区的瞬变电磁法精细探测·····	姚毅, 王浩, 刘军省, 石亮, 何良, 陈元喜, 李晓龙, 徐磊, 朱红金, 贺天全 (415)
基于4M1E分析法的地勘行业安全生产管理探讨·····	刘治, 江国会, 姜春晓, 梅志华, 马方, 史猛, 邹键, 万鹏 (422)

DRILLING ENGINEERING

Vol.51 No.S1 (SUM No.448)

Oct. 2024

Bimonthly

CONTENTS

Current research status and key technology of drill pipe and column materials for extra deep wells	
..... LIU Changshuo, WANG Yu, LI Lixin, QIN Yongjie, WANG Xianlin, WANG Cuizhu (1)	
Comparative analysis of several formation identification methods based on parameters while drilling	
... ZHANG Hangsheng, SUN Pinghe, ZHU Jianjun, DENG Yingying, CAO Han, ZHANG Chen, ZHANG Xinxin, PU Yingjie (10)	
A review of research on the application of water jet technology in marine hydrate drilling and mining processes	
..... DENG Xinying, PAN Dongbin, LI Jie, CHEN Chen, YÜ Yü, DUAN Haoran (16)	
Research status of multi-field coupling model in deep energy exploitation: A case study of hot dry rock	
..... LI Hanlin, CAO Han, ZHU Junsheng, LÜ Yan, ZHU Ling (24)	
By using the new-quality productive force to push forward innovation development utilization and another accomplishment of drilling equipment and technologies.....	
..... ZHANG Yongqin, LI Xiaoyang, LI Kuan, LI Kaizhou, CHEN Shi, WEI Yiqiang, WANG Jingbing (29)	
Application status and development trend of exploration drilling rigs in water conservancy and hydropower engineering	
..... ZHOU Zhigang, HUANG Fan, YAO Zhentong, DING Ye, HUANG Yanpu, XIA Jun, WANG Changyu (35)	
Repair mechanism of induced calcium carbonate on microcracks of cement mortar under carrier protection	
ZHENG Mingming, ZHANG Yawei, HU Yunpeng, ZHOU Hong, LI Zhijun, YAO Lei, WANG Zhilin, BAI Shiqing (42)	
Numerical simulation study on heat tracing power of return-water hose of deep hot-water drill in polar regions	
..... LI Xiaobing, LI Bing, LI Yazhou, LIU Yizhuo, ZHANG Zaixing (51)	
Stacking integrated model for real-time prediction of soil mechanical properties based on drilling parameters	
..... LI Qian, ZHOU Zhigang, DENG Guanghong, LIU Xuyong, DING Ye (61)	
Research on the criterion of hole accident about core drilling based on expert knowledge and parameter thresholds.....	
..... YANG Ke, PU Chun, LIAO Linxiang, CAO Zaokai (70)	
Analysis of core blockage morphology and exploration of anti-blockage methods in trip round coring	
..... CAO Longlong, ZHANG Hengchun, YAN Jia, WU Jixiu, ZHAO Junjie (78)	
Experimental optimization study of antenna parameters for near-bit measurement system while drilling	
WEI Hairui, WU Chuan, ZHU Zhitong, SHEN Xianhong, LIAO Yuhao, LIU Kuo, JIA Minghao, SHAO Yutao, LIU Guang (85)	
Experimental study of rock cutting-carrying for high-pressure CO ₂ jet drilling based on non-spherical rock cuttings	
..... YANG Xianpeng, TU Jie, CAI Can, ZENG Qi, WEI Huaizhou, PU Zhicheng, CHEN Hao (90)	
Analysis of drilling fluid rotational viscosity tests subjected to double cylinder moments	
LI Yue, JIANG Xin (96)	
Cementing quality evaluation method research by image recognition technology	
..... ZOU Zhuofeng, ZHANG Baoquan, LI Hui, WANG Jianhua, WANG Haitao, GUAN Zhen (104)	
Study on the critical flow rate of diversion well in the mining process of ionic rare earth	
..... ZHOU Yang, PAN Dongbin, ZENG Yunshuang (112)	
Research on restoration and stimulation technology for damaged geothermal formations	
..... LU Wei, ZHANG Han, SHEN Yunfei, WANG Jinliang, GU Chao, BAI Chen (117)	
Drilling techniques for pollution pathway identification in exposed karst subterranean river systems in Guizhou	
..... CHEN Tao, LI Qiang, JIANG Feng, ZHAO Huaxuan, CHEN Hao, JIA Yuchuan, WANG Ruofan (124)	
Development and application test of controllable local hot melt bit	
..... GONG Jianyu, WANG Jiuquan, YANG Biao, TONG Jianhuo, CAO Changxing, WAN Daijin (132)	
Research and application of ocean adaptive telescopic rope core drilling technology	
..... YIN Guoyue, QI Liqiang, WANG Linqing, QIN Rulei, MA Hanchen (138)	
The development of wireline coring barrel vibration anti-blocking drilling tools	
WANG Zhixiang, HAN Qing, OU Tao (143)	
Design of slurry forward/reverse circulation switching mechanism and optimization of its fluid channel in hydrodynamic-driven cordless coring system ...	
MA Ziyi, LI Zhijun, LIU Kuo, LONG Aiguo, LI Yueyang, GUO Guangding, ZHANG Hao (150)	

Research on pressure maintaining and core sampling technology for deep coalbed methane and its application	
..... ZHAO Yi, LIU Hailong, LI Chun, ZHANG Jianyuan, SHEN Lina, WU Haixia, WANG Chenglong (158)	
Research on the application of self-excited oscillation rotary impact drilling technique	
..... HUI Hang, WANG Hu, CHEN Xinyong, CHEN Dengqi, CHANG Xingren, LI Yong (166)	
Application analysis of the “four in one” drilling tools in directional drilling engineering	
..... CAO Yongbin, YANG Dequan, DU Bin, YANG Xiaobing, MA Jian, LI Bei, LI Yan (172)	
Design and simulation analysis of drill lock assembly for casing directional drilling	
..... ZHU Mingxiang, SONG Gang, ZHANG Xin, CHEN Xiaojun, CUI Shuying, TIAN Yingying, NIU Qinglei, HAN Zelong, ZHAO Ming (178)	
Development of vibration pipe puller and its application in dealing with stuck and buried drilling in core drilling	
..... SONG Jiwei, RAN Fei, TIAN Penghui, FANG Qing, ZHU Dousheng (187)	
Experimental study on strengthening and improving the anti-collapse and wall protection performance of solid-free flushing fluid ...	
..... SHI Ming, YANG Yaping, ZHANG Xizhi, LUO Huanzhen, TAN Yijun, JIANG Bing, ZHANG Tongde (191)	
Synthesis and field application of acid-soluble fiber for plugging leakage	SONG Yanchao (196)
Research on surface modified vitrified microbeads for enhanced geothermal insulation cement	
..... CAO Zaokai, TAN Huijing, LIAO Linxiang, LUO Long, YANG Ke, ZUO Yue (202)	
Research and application of UAV lifting modular drill technology	
..... WANG Wenbin, LONG An, WU Ronghua, LI Weiwu, ZHU Xian, ZHU Miaolin (208)	
Development of power head for HRD800F horizontal core drill	LIN Xiabin, HUANG Haiyou, LI Yong (216)
Research on scale prevention and removal system for drill pipe of wire-line core drilling	
..... ZHAO Jiangang, XU Yunbo, SHI Kai, LI Huixiang, WANG Xuezu, WEI Rui, LI Jin (222)	
Design and mechanical analysis of RN254 roughneck shackle pliers	
..... XU Benchong, WANG Linqing, LIU Fanbai, LI Wenxiu (226)	
Research and application of RN254 roughneck electrical control system based on Profinet and S7-1200 PLC	
..... LIU Xiaolin, WANG Linqing, XU Benchong, LIU Fanbai (231)	
Design of switch system of RMR lift pump group	
..... LIU Xiaolin, JIANG Yuhao, GAO Jieyun, WANG Linqing, YIN Guoyue (238)	
Design of RMR underwater pump monitoring system via Modbus RTU based on LabVIEW and PLC	
..... LIU Xiaolin, GAO Jieyun, CHEN Haowen (245)	
Design and research of deep-sea RMR liquid level identification and control system based on image recognition	
..... GAO Jieyun, CHEN Haowen, QIN Rulei, LIU Xiaolin (252)	
Development and application of a portable pump-in tester while drilling with airbag isolation	
..... ZHOU Zhigang, HUANG Fan, DING Ye, HUANG Yanpu, XIA Jun, WANG Changyu (258)	
Green exploration technology of potassium mine exploration in Mahai District, Mangya City, Qinghai Province	
..... LIU Haisheng, HU Yongqi, DOU Bin, XU Guohui, ZHAO Bonan, SU Yanhe (263)	
Application and practice of green exploration technology in drilling projects in the Mufu mountain area of Hunan Province	
..... FANG Guoqing, PAN Deyuan, WANG Jie, CAI Jun, HE Qianping, XU Qiurwen, WANG Hu (269)	
Green drilling technology for deep dell electrode geological survey in Tsavaron	
..... HU Wenhui, LI Fenqiang, WANG Sui, SONG Jiangui, DENG Tuo, SU Qiongyu, YE Jianling (275)	
Core drilling technology for shallow brine mine in a salt lake in Qinghai Province	
..... LIU Bei, YANG Yongshun, ZHOU Zihao, LI Xuening, ZHANG Xiong, CHUAI Jinle (280)	
Core drilling technology for complex strata in Yangling iron mine area, Gansu Province	
..... LI Zengliang, CHEN Yongping, MU Yuanhong, YANG Haiyun, LIU Haisheng (287)	
Comprehensive drilling construction technology for complex strata in Dongbeizhai Gold Mine	
..... ZHANG Xu, LI Zhongming, WANG Ze, XIAO Yao, YANG Zhiguang, LIU Shenbo (292)	
Winter drilling construction technology in Shenjing coal exploration area, Zhongwei City, Ningxia	
... HE Yuyun, CAO Xuebin, XIONG Zhengqiang, ZI Bing, ZHANG Xuejin, XUE Shanjiang, HE Lin, YANG Wenjie (299)	
Application of full hydraulic drilling rig in shale formation drilling construction	
..... WANG Taiping, JIANG Guangxu, XIANG Cheng, ZHOU Xiangwei, WEI Yibin (303)	

Application research of backpack drill in the black soil surface matrix survey	
.....	<i>LI Yuze, WU Jie, SUN Xiao, SU Jiabin, GUO Guangping, HAN Tao, YANG Yaqian, ZHANG Qiang</i> (307)
Design and application of small-diameter directional drilling PDC bit in Lanling iron ore	
.....	<i>HUANG Jianqiang, ZHANG Yunlong, HUANG Baosheng, FENG Chaochen, DU Yaosen, ZHANG Hengchun, DONG Xiangyu</i> (313)
Research on the use of hydraulic cutting knives in the Mingyuefeng area of Hunan Province	
.....	<i>SUN Xiyu, YI Junping, SHEN Yinghang, JIA Minghao</i> (318)
Study and application of polymer flushing fluid system with easy degradation and strong anti-collapse inhibition for +304 hole in Huacaotan mining area	
.....	<i>LEI Yongsheng, JI Weijun</i> (322)
Case study and analysis of cement plugging technology for core drilling in lost circulation formation	
.....	<i>WEI Dexiang, GAO Jinhua, LIU Weiping, SUN Jianyue</i> (327)
Drilling and construction technology of Well Ehey 3 in the western Hubei	
.....	<i>WANG Jie, PAN Deyuan, CAI Jun, WANG Wenshi, LI Hai, FANG Guoqing, HE Qianping, LI Kai</i> (332)
Research and application of drilling technology for shale gas geological survey wells in Liuzhou area	
.....	<i>YIN Xin, MENG Faqiang, LI Mingxing, LI Chaoping, HU Wei</i> (341)
Application of alkali treatment for sticking in Well WBD-1	<i>ZHAO Hongbo, QI Zhihu, YUE Weimin, CAI Zhengshui</i> (348)
Research and practice of sidetracking schemes for complex wells in Bohai Oilfield	
.....	<i>CHEN Liqiang, YU Changguang, WANG Yuxin, TANG Jie, WANG Zan, CHEN Guohong</i> (352)
Practice and recognitions of optimizing the second spudding of Well GY15-Q8-H1 of Gulong shale oil	<i>PAN Zizhen</i> (358)
Research and application of drilling plugging technology in Changqing area	
.....	<i>SUN Huan, ZHU Mingming, SHI Chongdong, LIU Zhaofeng, QU Yanping, SUN Yan, YANG Fan</i> (364)
Study and application of drilling fluid system for strong plugging and collapse prevention in multi-branch wells of Zhangji Coal Mine	
.....	<i>LIU Heng, YANG Shengchun, JI Weijun</i> (368)
Study and practice of wireline logging technology in open sea area for ultra-deep water and ultra-shallow exploration wells	
.....	<i>DAI Rui, LUO Ming, WU Yanhui, MA Chuanhua, LI Wentuo, HUANG Honglin, YIN Jianxi, LI Jun</i> (373)
Practice of liner cementing technology for high temperature and large displacement wells in Pinghu Oilfield	
.....	<i>TIAN Junzheng</i> (378)
Drilling technology of Well Weire-1 for geothermal geological survey in western Taikang Uplift, South North China Basin	
.....	<i>GUO Chong, ZHU Huailiang, YANG Zhongyan, WANG Liyan, CAI Jinmeng, LI Wenlong, LIN Shengming, ZHANG Yuqi</i> (384)
Drilling technology optimization and application for geothermal directional wells in Tianjin	
.....	<i>SU Xiaofei, YANG Zhongyan, DONG Lufei, SUN Yudong, CAI Jinmeng</i> (392)
Near-point reverse pull technology of horizontal intersected wells in Wuyang Salt Mine	
.....	<i>JIANG Xiangguang, YAN Weichao, HONG Yi, YANG Yi, YE Huibing, CHEN Weibao, WAN Yuhang</i> (398)
Application of horizontal directional drilling technology in the exploitation of a potash mine, Qinghai Province	
.....	<i>WEI Hairui, MA Lin, LIU Kuo, JIA Minghao, WU Lilin, ZHU Zhitong, SHAO Yutao, LIU Guang, JIA Wei</i> (404)
Construction technology of super-large diameter feed hole in Beixulou coal mine	
.....	<i>SHI Tianfeng, WANG Kai, LUO Qingyin, ZHAO Yuanqiang</i> (411)
High-precision transient electromagnetic method detection of mining voids and karst aquifers in the Qingping phosphate mine area	
.....	<i>YAO Yi, WANG Hao, LIU Junsheng, SHI Liang, HE Liang, CHEN Yuanxi, LI Xiaolong, XU Lei, ZHU Hongjin, HE Tianquan</i> (415)
Discussion of safety production management in geological exploration industry based on 4M1E analysis method	
.....	<i>LIU Zhi, JIANG Guohui, JIANG Chunxiao, MEI Zhihua, MA Fang, SHI Meng, ZOU Jian, WAN Peng</i> (422)

Sponsored: China Mining News

Institute of Exploration Techniques, CAGS

Published: Editorial Office of Drilling Engineering

(No.26 Baiwanzhuang, Beijing Postcode: 100037 E-mail: tkgc@mail.cgs.gov.cn)

Chief Editor: SUN Youhong

International Distribution: China National Publishing Industry Trading Corporation (P.O.Box 782, Beijing)