

XIX International Symposium in Honour of Academician M. A. Usov: Problems of Geology and Subsurface Development 2015

IOP Conference Series: Earth and Environmental Science
Volume 27

Tomsk, Russia
6 – 10 April 2015

Editors:

G. M. Ivanova

ISBN: 978-1-5108-1632-9
ISSN: 1755-1307

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Table of contents

Volume 27

**XIX International Scientific Symposium in honor of Academician M.A. Usov
"Problems of Geology and Subsurface Development"
6–10 April 2015, Tomsk, Russia**

Published online: 10 November 2015

Preface

011001

[XIX International Scientific Symposium in honor of Academician M.A. Usov "Problems of Geology and Subsurface Development"](#) OPEN ACCESS G M Invanova

011002

[Peer review statement](#) OPEN ACCESS

Papers

Mineralogy, Geochemistry and Petrography

012001

[Hydrothermal alteration mapping of Siberian gold-ore fields based on satellite spectroscopy data](#) OPEN ACCESS Yu S Ananyev, A A Maskov and R N Abramova""ri 03""

012002

[Petrogenetic characteristics of mafic-ultramafic massifs in Nizhne-Derbinsk complex \(East Sayan Mountains\)](#) OPEN ACCESS T Cherkasova, A Chernishov, Yu Goltsova, T Timkin and R Abramova""ri 08

012003

[Rear polymineral zone of near-veined metasomatic aureole in mesothermal Zun-Holba gold deposit \(Eastern Sayan\)](#) OPEN ACCESS T Cherkasova, I Kucherenko and R Abramova""ri 033

012004

[Post - sedimentation influence on filtration capacity reservoir rock properties \(Pur-Tazov oil\gas-bearing area\)](#) OPEN ACCESS E Isaeva, N Stolbova and T Dolgaya""r i 038

012005

[Oriented core application in texture analysis of J₁ formation in Kazan oil-gas condensate field \(Tomsk Oblast\)](#) OPEN ACCESS L Krasnoshekova, D Cherdansteva, M Yurkova and R Abramova""r i 044

012006

[Mineral-petrochemical wallrock alteration of rocks in Bericul gold-ore deposit \(Kuznetsk Alatau\)](#) OPEN ACCESS I Kucherenko, Zhang Yuxuan and R Abramova""r i 048

Ore Deposits. Current Prospecting and Exploration Methods

012007

[Crystal morphology and thermal EMF of pyrites in the western flank of Sukholozhsky gold ore field \(Lenski ore area\)](#) OPEN ACCESS R Gavrilov, A Pshenichkin, M Ponamarenko and R Abramova""r i 052

012008

[Exploration and local forecast of gold-ore deposits based on typomorphic properties of pyrite](#) OPEN ACCESS A Ya Pshenichkin, Yu S Ananyev, A I Bushmano and R N Abramova""r i 057

012009

[Lithologic-facies and paleogeographic features of Mid-Upper Jurassic oil-gas bearing sediments in Nurolsk depression \(Western Siberia\)](#) OPEN ACCESS I Rychkova, M Shaminova, V Sterzhanova and A Baranova""r i 063

012010

[Estimating gold-ore mineralization potential within Topolninsk ore field \(Gorny Altai\)](#) OPEN ACCESS T Timkin, V Voroshilov, O Askanakova, T Cherkasova, A Chernyshov and T Korotchenko""r i 069

Petroleum Geology. Current Exploration and Extraction Methods

012011

[Geophysical characteristics and structural composition of clay rocks in the terrigenous complex of the southeastern part of the West Siberian oil and gas bearing province](#) OPEN ACCESS A Ezhova and N Nedolivko""ri 075

012012

[Core acid treatment influence on well reservoir properties in Kazan oil-gas condensate field](#) OPEN ACCESS A Janishevskii and A Ezhova""ri 07;

012013

[Identification of electrofacies on the basis of well logging to determine sedimentation environment of horizon JK₂ in Em-Egovskoe field \(Western Siberia\)](#) OPEN ACCESS L Kudryashova, V Belozarov and E Pushtakov""ri 085

012014

[Specific features of Bazhenov suite sediments in south-eastern Nurolsk sedimentary basin \(Tomsk Oblast\)](#) OPEN ACCESS N Nedolivko, T Perevertailo, Li Cunyi and R Abramova""ri 08;

012015

[Terrestrial heat flow and its role in petroleum geology](#) OPEN ACCESS E N Osipova, I V Ivanov, V A Smirnov and R N Abramova""ri 097

012016

[Application of geologic-mathematical 3D modeling for complex structure deposits by the example of Lower- Cretaceous period depositions in Western Ust - Balykh oil field \(Khanty-Mansiysk Autonomous District\)](#) OPEN ACCESS T Perevertailo, N Nedolivko, O Prisyazhnyuk and T Dolgaya""ri 0: 3

012017

[Investments in oil field development by the example of Tomsk oblast](#) OPEN ACCESS Ye I Schmidt, G F Il'ina and I A Matveenko""ri 0: 8

012018

[Litho-facies and paleotectonic background of hydrocarbon reservoirs in North Kalinov gas-condensate field \(Tomsk Oblast\)](#) OPEN ACCESS T G Ten, E V Panova and R N Abramova""ri 0: 3

012019

[Perspectives of oil and gas presence in pre-jurassic sediments on the example of one West Siberian deposit](#) OPEN ACCESS A I Tseplyaeva""r i 0; 9"

012020

[Stability of the liquid particles separation in the apparatus of oil and gas systems](#) OPEN ACCESS M V Vasilevsky, P N Zyatikov, A Y Burykin and V S Deeva""r i 0324

012021

[Integrated analysis of risks in terms of Russian Arctic zone sustainable development](#) OPEN ACCESS Y Bolsunovskaya, L Bolsunovskaya, A Sentsov and N Scherbinina""r i 0329

012022

[The Russian Arctic: innovative possibilities at the turn of the past and the future](#) OPEN ACCESS A Scherbinin, E Danilova, A Sentsov, L Bolsunovskaya and Yu Bolsunovskaya""r i 0334

Geophysical Surveying Methods for Ore Deposit Prospecting. Geoinformation Systems in Geophysical Surveys

012023

[Assessment of Mesozoic-Kainozoic climate impact on oil-source rock potential \(West Siberia\)](#) OPEN ACCESS A A Iskorkina, V I Isaev and D A Terre""r i 033:

012024

[Predicted facies, sedimentary structures and potential resources of Jurassic petroleum complex in S-E sWestern Siberia \(based on well logging data\)](#) OPEN ACCESS F Prakajo, G Lobova and R Abramova""r i 0346

012025

[Improving the accuracy of determining the character saturation reservoirs on the results of log interpretation in the oil field "K"\(Tomsk region\)](#) OPEN ACCESS A A Rogov""r i 0352

012026

[Structural-chemical features and morphology of glauconites in sedimentary iron ore of Bakchar prospect \(Western Siberia\)](#) OPEN ACCESS M Rudmin, I Reva, A Gunko, A Mazurov and R Abramova""r i 0358

012027

[Modeling of seismic field in porous medium:Simulation study of single pore and pore ensemble effects](#) OPEN ACCESS A A Shatskaya, M M Nemirovich-Danchenko and D A Terre""r i 0364

012028

[Petrophysical zoning elements of Chertovo Koryto gold-ore deposit \(Patom Upland, Eastern Siberia\)](#) OPEN ACCESS S V Sokolov, Y V Kolmakov and D A Terre""r i 036:

Hydrogeology and Engineering Geology. Geoinformation Systems in Hydrogeology and Engineering Geology

012029

[Impact of oil on groundwater chemical composition](#) OPEN ACCESS N N Brakorenko""r i 0374

012030

[The Relationship of Physical Property Indicators and Clay Soil Structural Strength of Tomsk Oblast Territory](#) OPEN ACCESS V V Kramarenko, A N Nikitenkov, V Y Molokov, I A Matveenko and A V Shramok""r i 0378

012031

[Hydrogeological Conditions Changes of Tomsk, Russia](#) OPEN ACCESS V D Pokrovsky, E M Dutova, K I Kuzevanov, D S Pokrovsky and N G Nalivaiko""r i 0383

012032

[Karst hazard assessment in the design of the main gas pipeline \(South Yakutia\)](#) OPEN ACCESS L A Strokova, E M Dutova, A V Ermolaeva, I N Alimova and A B Strelnikova""r i 0389

012033

[Methods for karst hazard forecast and pipeline protection in South Yakutia](#) OPEN ACCESS L A Strokova and E A Teterin""r i 0395

Hydrogeochemistry and Hydrogeoecology. Geionformation Systems in Hydrogeochemistry and Hydrogeoecology

012034

[Uranium and thorium behavior in groundwater of the natural spa area "Choygan mineral water" \(East Tuva\)](#) OPEN ACCESS Y Kopylova, N Guseva, A Shestakova, A Khvaschevskaya and K Arakchaa""r i 039;

012035

[Microbiological composition of river waters in the Ob' basin \(West Siberia\) and its associations with hydrochemical indices](#) OPEN ACCESS O G Savichev, O G Tokarenko, E Yu Pasechnik, N G Nalivaiko, E A Ivanova and L V Nadeina""r i 03: 7

012036

[Influence of peat formation conditions on the transformation of peat deposit organic matter](#) OPEN ACCESS O V Serebrennikova, E B Strelnikova, Yu I Preis and M A Duchko""r i 03; 3

012037

[Size fractionation of trace elements in the surface water and groundwater of the Ganjiang River and Xiushui River basins, China](#) OPEN ACCESS E A Soldatova, N V Guseva, Z Sun and I S Mazurova""r i 03; 9

012038

[Modeling results of calcium-containing minerals precipitation in the alkaline hydrotherms of Baikal Rift Zone: calcite and dolomite](#) OPEN ACCESS O G Tokarenko and E V Zippa""r i 0425

Land Management. Science and Research

012039

[Comparative analysis of forest lands cadastral appraisal estimated with regards to wood and food resources](#) OPEN ACCESS V Kovyazin, A Romanchikov and O Pasko""r i 042;

012040

[Comparative analysis of land management in the world](#) OPEN ACCESS A Pomelov, O Pasko and A Baranova""r i 0436

Geocology and Environmental Protection. Geoinformation Systems in Geocology and Environmental Protection

012041

[Evaluation of metal content in perch of the Ob River basin](#) OPEN ACCESS N A Osipova, K D Stepanova and I A Matveenko""ri 043:

012042

[Mineralogical and geochemical characteristics of drinking water salt deposits](#) OPEN ACCESS B R Soktoev, L P Rikhvanov and I A Matveenko""ri 0445

012043

[Fluorine concentration in snow cover within the impact area of aluminium production plant \(Krasnoyarsk city\) and coal and gas-fired power plant \(Tomsk city\)](#) OPEN ACCESS A V Talovskaya, N A Osipova, E A Filimonenko, S A Polikanova, N P Samokhina, E G Yazikov and I A Matveenko""ri 044;

Latest Researches in Reservoir Engineering

012044

[The influence of dispersing additive on the paraffin crystallization in model systems](#) OPEN ACCESS A M Gorshkov, Pham Tien Thang, L V Shishmina and L V Chekantseva""ri 0457

Latest Researchers in Hydrocarbon Refining

012045

[Synthesis of ZSM-5 galloalumosilicate and investigation of their physicochemical and catalytic properties in the course of conversion of propane into aromatic hydrocarbons](#) OPEN ACCESS L N Vosmerikova, A N Volynkina and A V Vosmerikov""ri 0463

012046

[Mathematical modeling of diesel fuel hydrotreating](#) OPEN ACCESS A Tataurshikov, E Ivanchina, N Krivtsova, E Krivtsov and A Syskina""ri 0469

012047

[Analysis of technological conditions influence on efficiency of oilfield treatment](#) OPEN ACCESS N V Usheva, O E Moizes, E A Kuzmenko, S F Kim, E S Khlebnikova, S N Dyalilova and T V Filippova""ri 0475

Integrated Use and Processing of Mineral Resources

012048

[Electrochemical synthesis of nickel-aluminium oxide system from metals obtained by ore processing](#) OPEN ACCESS V V Korobochkin, N V Usoltseva, K G Shorokhov and E V Popova""ri 047:

Latest Technology of Oil and Gas Driling

012049

[Development of engineering solutions for air drilling at Dulisminsk oilfield, Irkutsk oblast](#) OPEN ACCESS Yu L Boyarko, O S Ulyanova and K V Buzanov""ri 0486

012050

[The diagram development for Computer Added Control and Monitoring system of drilling](#) OPEN ACCESS A V Epikhin, R S Mikhalev, A V Anisimov and O S Ulyanova""ri 048;

012051

[Experimental research of drilling mud influence on mud motor mechanical rubber components](#) OPEN ACCESS A V Epikhin, A V Ushakov, V V Barztaikin, V V Melnikov and S Ulyanova""ri 0497

012052

[Efficiency increase of hard rock destruction with the use of eccentric pulses](#) OPEN ACCESS P Pushmin and G Romanov""ri 04: 3

012053

[The research of sapropels as the drilling fluids in dispersed phase \(Lake Kirek\)](#) OPEN ACCESS R R Sagitov and K M Minaev""ri 04: 9

Latest Technology of Ore Deposits Surveying

012054

[Arresting and supplying apparatus for increasing pellet impact drilling speed per run](#) OPEN ACCESS A V Kovalyov, Ye D Isaev, A V Veryevkin, V M Gorbenko and O S Ulyanova""r i 04; 3

Mining. Ore and Non-metallic Minerals Development

012055

[Energy-saving compression valve of the rock drill](#) OPEN ACCESS A N Glazov, A A Efanov and T Yu Aikina""r i 04; 7

012056

[Drill pipe threaded nipple connection design development](#) OPEN ACCESS A L Saruev, L A Saruev and S S Vasenin""r i 0522

012057

[The behavior of enclosed-type connection of drill pipes during percussive drilling](#) OPEN ACCESS A Shadrina and L Saruev""r i 0527

012058

[Safety enhancement of oil trunk pipeline crossing active faults on Sakhalin Island](#) OPEN ACCESS E Tishkina, N Antropova and T Korotchenko""r i 0532

Modern Oilfield Equipment and its Upgrading

012059

[The dependence of cylindrical resonator natural frequencies on the fluid density](#) OPEN ACCESS V Rudachenko, V Filushin and T Korotchenko""r i 0537

Latest Technology of Oil-and-Gas Pipelines and Petroleum Storage

012060

[Design of automated oil sludge treatment unit](#) OPEN ACCESS N Chukhareva, T Korotchenko and A Yurkin""r i 0542

012061

[Suppression of flow pulsation activity by relaxation process of additive effect on viscous media transport](#) OPEN ACCESS S Kharlamov, P Dedeyev, L Meucci, I Shenderova, A Manastirniy and M Usenko""r i 0546

012062

[Formalization of hydrocarbon conversion scheme of catalytic cracking for mathematical model development](#) OPEN ACCESS G Nazarova, E Ivashkina, E Ivanchina, S Kiseleva and V Stebeneva""r i 0552

Energy Efficiency and Automation Systems for Oil and Gas Facilities

012063

[Experimental evaluation of the effectiveness of water mist automated fire extinguishing systems for oil transportation](#) OPEN ACCESS D O Glushkov, G S Nyashina, P A Strizhak and R S Volkov""r i 0558

012064

[Explosion of heterogeneous water droplet in a high-temperature gaseous region](#) OPEN ACCESS M V Piskunov and A A Shcherbinina""r i 0564

012065

[Power autotransformer choice for ensuring power supply of oil and gas fields](#) OPEN ACCESS I S Tsoy and N M Kosmynina""r i 056:

Petroleum Engineering Economics. Mining Law

012066

[Approaches of Russian oil companies to optimal capital structure](#) OPEN ACCESS T Ishuk, O Ulyanova and V Savchitz""r i 0576

012067

[Study of the electrodes length influence on the trajectories of water droplets dispersed in oil and affected by non-uniform electric field](#) OPEN ACCESS S N Kharlamov, V V Zaikovskii and I V Shenderova""r i 057;

012068

[Potential of renewable and alternative energy sources](#) OPEN ACCESS V Konovalov, O Pogharnitskaya, A Rostovshchikova and I Matveenkov""r i 0587

012069

[Petroleum staff reluctance and adjustment to innovative changes](#) OPEN ACCESS Yu S Makasheva, N P Makasheva, V V Remnyakov, B S Burykhin and I V Shenderova""r i 0592

012070

[Compensation for oil pollution damage](#) OPEN ACCESS E G Matugina, T S Glyzina, Yu V Kolbysheva, A S Klyuchnikov and O V Vusovich""r i 0597

012071

[Intensive use of energy resources regarding sustainable cities](#) OPEN ACCESS E G Matugina, O V Pogharnitskaya, K O Petrova and A B Strelnikova""r i 05: 2

012072

[Corporate social policy - problems of institutionalization and experience of Russian oil and gas companies](#) OPEN ACCESS E Nekhoda, Yu Kolbysheva and V Makoveeva""r i 05: 6

012073

[Regulatory framework of pricing and estimate standards in the petroleum sector](#) OPEN ACCESS V Romanyuk, U Baitova, E Safronova and G Pozdeeva""r i 05; 2

012074

[The influence of mechanochemical modification on prevention of toxic ability of humic acids towards phenanthrene in aquatic environment](#) OPEN ACCESS N S Shekhovtsova, E V Maltseva, T S Glyzina and I S Ovchinnikova""r i 05; 7

012075

[Supervising development in petroleum industry of the Russian Federation](#) OPEN ACCESS A Sizov, K Tretyakov, G Boyarko, I Shenderova and A Shakirov""r i 0622

012076

[Economic assessment of environmental impact in the course of oil field development and production](#) OPEN ACCESS M R Tsibulnikova, O S Kupriyanova and A B Strelnikova""r i 0628

012077

[The comparative analysis of payments for negative environmental impact in Russia and Kazakhstan](#) OPEN ACCESS M R Tsibulnikova, A T Ospanov, D V Salata and A B Strelnikova""r i 0632

012078

[Associated petroleum gas utilization in Tomsk Oblast: energy efficiency and tax advantages](#) OPEN ACCESS A Vazim, V Romanyuk, K Ahmadeev and I Matveenko""r i 0637

012079

[Tax incentives as the tool for stimulating hard to recover oil reserves development](#) OPEN ACCESS I V Sharf, D N Borzenkova and L S Grinkevich""r i 0642

012080

[Production operation of small petroleum enterprises in Tomsk region](#) OPEN ACCESS I Sharf, V Filjushin, I Shenderova and O Kochetkova""r i 0648