

# **GeoBaikal 2016: Expand Horizons**

**From East Siberia to the Pacific –  
Geology, Exploration and Development**

Irkutsk, Russia  
22 - 26 August 2016

ISBN: 978-1-5108-2892-6

**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© (2016) by the European Association of Geoscientists & Engineers (EAGE)  
All rights reserved.

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)  
at the address below.

European Association of Geoscientists & Engineers (EAGE)  
PO Box 59  
3990 DB Houten  
The Netherlands

Phone: +31 88 995 5055  
Fax: +31 30 634 3524

[eage@eage.org](mailto:eage@eage.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: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## PLENARY SESSION

<b>PL01 Salinization Forecast as a Main Factor of Success in Eastern Siberia .....</b>	1
<i>V. S. Vorobyev</i>	
<b>PL05 Identification of Prospective Hydrocarbon Deposits in the Vendian - Cambrian Sedimentary Cover Nepa - Botuoba Anteclise .....</b>	6
<i>A. V. Gaiduk, A. V. Mityukov, A. V. Filichev, M. V. Mordvintsev</i>	

## GEOLOGY OF HYDROCARBON FIELDS: EASTERN SIBERIA AND YAKUTIA (SAKHA)

<b>GES01 Hydrocarbon Saturation Forecast of Chona Fields .....</b>	13
<i>V. S. Vorobyev</i>	
<b>GES02 The New Promising Reservoirs in the Cambrian Sediments at the Kovikta Gas-Condensate Field .....</b>	18
<i>I. V. Gorlov, A. S. Smirnov, S. F. Ignatyev, A. G. Vakhromeev, A. V. Pospeev, N. V. Misurkeeva, Y. A. Agafonov, I. V. Buddo</i>	
<b>GES03 Genesis of Vendian Vanavara Sandstones as Hydrocarbon Reservoirs in the Western Siberian Platform.....</b>	23
<i>M. Maslennikov, N. Ivanova, V. Pustynnikova</i>	
<b>GES04 Clarification of the Geological Model Based on the Results of the Stochastic Inversion Srednebotuobinskoye Field.....</b>	28
<i>M. Y. Shapovalov, M. Osipova</i>	
<b>GES05 Plumetectonic Nature of the Geological Structure and Geodynamics of the Kazakhstan Territory .....</b>	33
<i>A. B. Baibatsha</i>	
<b>GES06 Reservoir Quality Prediction on the Basis of Faults Classification within Chona Group Fields .....</b>	39
<i>A. S. Meshcheryakova, V. S. Vorobyev, P. P. Emelyanov</i>	
<b>GES07 Some Aspects of Deposition and Distribution of Nutovo Sediments in Northeast Area of Sakhalin Shelf .....</b>	44
<i>V. Shegai, S. Kreknin, V. Hoshtariya, F. Zeleznyak</i>	
<b>GES08 Evaluation of Vendian Bokhansky Horizon Potential at the Kovikta Gas-Condensate Field .....</b>	49
<i>N. V. Misurkeeva, A. V. Pospeev, A. G. Vakhromeev, I. V. Gorlov, A. S. Smirnov, S. F. Ignatyev, Y. A. Agafonov, I. V. Buddo</i>	
<b>GES09 Integrated Approach in Geological Screening and Evaluation of Licensed Blocks in the Eastern Siberia.....</b>	54
<i>R. Khusniddinov, E. Rubtsov, A. Ostankov, L. Shakiryanov</i>	
<b>GES10 Determination of Reservoir Distribution Laws in Vendian Clastic Deposits of Nepa Botuoba Anteclise .....</b>	58
<i>N. A. Redkin, A. Gaiduk, A. Petrov, A. Mitykov, I. Halikov</i>	
<b>GES11 An Integrated Approach of Ground Water Exploration for Reservoir Pressure Management (The Srednebotuobinskoye Field).....</b>	63
<i>R. R. Valeev, V. A. Grinchenko, I. V. Egorov, Y. A. Agafonov</i>	

## CARBONATE RESERVOIRS: CHALLENGES OF STUDIES AND SPECIAL FEATURES OF HC RECOVERY

<b>CC01 The Optimum Mixture of Organic Acid and HCL for the Matrix Acidization of a Carbonate Reservoir .....</b>	68
<i>H. Jafarpour, M. F. Ghasemi, D. G. Petrakov, A. Khormali</i>	
<b>CC02 Sedimentary and Epigenetic Control of Carbonate Reservoirs Formation of Chonsky Oilfields (Tympučikanskoye, Vakunayskoye, Ignalinskaya).....</b>	73
<i>M. A. Tugarova, V. S. Vorobyov, A. V. Sizyk</i>	
<b>CC03 The Impact on the Mechanical Properties of Silicification of the Carbonate Cavernous Fractured Reservoirs on Yurubcheno- Tokhomskoye Field on a Range of Core and Geophysical Data.....</b>	78
<i>M. G. Nesmelova, E. M. Danilova, R. K. Razayev, A. G. Vahromeev</i>	

<b>CC04 An Integrated Approach to the Interpretation of Log Data in Complex Carbonate Reservoirs of the Pre-Jurassic Basement of the Southeast of Western Sibe .....</b>	83
<i>N. K. Kayurov, V. Glinskikh, K. Sukhorukova, I. Mikhailov</i>	
<b>CC05 Physical-Geological Model of the Preobrajensky Horizon and the Forecast Carbonate Reservoirs in the Nepsky Arch .....</b>	87
<i>L. A. Baryshev</i>	
<b>CC06 Identification of Petroleum Prospects in Subsalt Carbonate Section of Nepa-Botuoba Anteclise by 2D and 3D Seismic Data.....</b>	92
<i>A. E. Fomin, A. M. Batischeva, A. V. Gaiduk, A. V. Filichev</i>	

## **GEOLOGICAL AND HYDRODYNAMIC MODELS OF HC FIELDS IN EASTERN SIBERIA, YACUTIA AND ASIA-PACIFIC REGION**

<b>GH01 Improvement of Kovypta Gas-Condensate Field Geological Model Based on Gas Condensate Studies Results .....</b>	98
<i>Y. V. Beltikov, I. V. Gorlov, P. N. Kokarev, A. N. Larionova</i>	
<b>GH02 Author's Model of the Field. Relevance and Advantages of New Concept .....</b>	103
<i>V. A. Vanin, T. Malysheva, A. Zhubanov</i>	
<b>GH03 Clarification of the Stratigraphic Affiliation of the Boundary of the Permian and Triassic in the Context Kapshagayskogo Shaft.....</b>	108
<i>O. A. Smirnov, A. S. Nedosekin, A. R. Kurchikov, V. N. Borodkin</i>	
<b>GH04 Hydrogeological Condition of Oil-and-gas in Predpatomskii Progib.....</b>	111
<i>I. Litvinova, A. Surnin</i>	
<b>GH05 Adaptation of New Classification of Hydrocarbon Resources on the Example of Fields of PJSS "Gazprom neft" .....</b>	116
<i>E. S. Panfilova</i>	

## **RESERVOIR ENGINEERING AND ENHANCED OIL RECOVERY**

<b>FD01 Prediction of the Calcium Sulfate Deposition under Reservoir Conditions for Water Injection Process .....</b>	121
<i>Azizollah Khormali, M. F. Ghasemi, D. G. Petrakov, H. Jafarpour</i>	
<b>FD02 The Definition Resistant Development System to Geological Scenarios with a Probabilistic Assessment of Oil Production Forecasting for Chonskiy Project .....</b>	126
<i>V. Klimov</i>	
<b>FD03 Determination of Effective Frac Technology for Low Temperature, Oilwet Reservoirs in Ignyalinskoe Field (Eastern Siberia) .....</b>	131
<i>L. A. Gaydukov, V. S. Vorobyev, I. F. Safarov, V. A. Nikolaev, L. N. Shakiryanov, A. V. Ostankov</i>	
<b>FD04 Effect of Fault Stress Regime on the Mechanical Stability of Horizontal Boreholes .....</b>	138
<i>S. Sh. Tabatabae Moradi, M. F. Ghasemi, N. I. Nikolaev, Y. V. Lykov</i>	

## **MODERN SEISMIC METHODS FOR ASIA-PACIFIC REGION SETTINGS**

<b>SS01 The Determinations of the Angular Dependencies of the Amplitudes of the Reflected Waves under their Registrations by Method CDP .....</b>	143
<i>V. L. Sergeev, G. F. Zhernya, A. V. Isaev</i>	
<b>SS02 Study of the Prospective Acoustically High-Contrast Objects in the Eastern Siberia by the Multi-Layered Amplitude Inversion Method .....</b>	148
<i>D. A. Danko, V. I. Ryzhkov, S. V. Filimonenko</i>	
<b>SS03 Time Sections of Head Waves on Connection Area of Siberian Platform and Verkhoyan-Kolymskaya Bow Area .....</b>	153
<i>P. O. Polyansky, A. F. Emanov, A. S. Salnikov</i>	
<b>SS04 Prospective Cliniform Cambrian Deposits of the Siberian Platform .....</b>	158
<i>G. D. Ukhlova</i>	
<b>SS05 Experience and Prospects of Detailed Studying of the Jurassic Deposits in Western Siberia with Using Inversion Transform.....</b>	163
<i>S. S. Sanin, D. S. Tataurov</i>	
<b>SS06 Numeric Modeling of Direct Exploration Seismology in Fractured Media Problems .....</b>	168
<i>M. V. Muratov, I. B. Petrov</i>	

<b>SS07 Finite-Difference Seismogeological Modeling to Improve the Efficiency of Processing and Quality of Seismic Data Interpretation</b> .....	172
<i>D. N. Tverdokhlebov, V. S. Korobkin, E. A. Danko, E. G. Kashirina, A. V. Filichev</i>	

## **CORE ANALYSIS FEATURES AND PETROPHYSICAL MODELING OF FIELDS IN EASTERN SIBERIA, YAKUTIA AND THE ASIA-PACIFIC REGION**

<b>CA01 Использование данных ядерно-магнитного-каротажа и электрических пластовых микросканеров для выделения продуктивных интервалов в карбонатных подсолевых</b> .....	177
<i>A. Darmaev, V. A. Kolesov, D. V. Nazarov</i>	
<b>CA02 Advances in Petrophysical Modelling of Clastic Rocks at Chona Group Fields.</b> .....	182
<i>S. V. Mukhidinov, V. S. Vorobyev</i>	
<b>CA03 Content, Distribution and Accumulation Processes of Halite in Vendian Terrigenous Formations in Eastern Siberia.....</b>	187
<i>E. A. Zhukovskaya, A. S. Sidubaev, V. S. Vorobev</i>	
<b>CA04 Quantitative Characterization of Microscopic Pore Structure in Shale Reservoir from the Jianghan Basin.....</b>	192
<i>Wh Li</i>	

## **ELECTRICAL PROSPECTING EQUIPMENT, QC SYSTEMS, PROCESSING, AND DATA INTERPRETATION**

<b>EE01 Estimation of Noisy Synthetic TEM Curves Inversion Reliability</b> .....	197
<i>V. S. Emelyanov, R. G. Guseinov, I. V. Buddo, A. V. Pospeev, Y. A. Agafonov</i>	
<b>EE02 Approach to Multidimensional Geometric Inversion of Data Obtained by Multi-spacing TEM Soundings</b> .....	202
<i>M. G. Persova, Y. G. Soloveichik, D. V. Vagin, Y. I. Koshkina</i>	
<b>EE03 High-Density Shallow TEM Surveys for Groundwater Prospecting in East Siberia</b> .....	207
<i>D. V. Kolesnikov, Y. A. Agafonov, M. V. Sharlov, A. A. Aksenovskaya, I. V. Egorov</i>	
<b>EE04 The Results of Three-Dimensional Modeling of EMS-IP Technology Data in Search for Gold Deposits in the Altai Mountains.....</b>	212
<i>S. V. Bukhalov, Y. A. Davidenko, D. V. Bogdanovich, N. A. Lavrenteva, E. A. Shibeko, V. V. Shulga, M. G. Persova</i>	
<b>EE05 The New Approach to 3D TEM Data Automatic Inversion Application</b> .....	217
<i>E. V. Murzina, V. S. Emelyanov, O. V. Tokareva, S. V. Kompaniets, Y. A. Agafonov, I. V. Buddo</i>	

## **GEOELECTRIC SURVEYS FOR OIL AND GAS: RECENT EXAMPLES OF GEOLOGICAL PROBLEMS SOLUTION**

<b>E01 Possibilities of the DNME Method on the Example of the Shallow Shelf of the Okhotsk Sea</b> .....	222
<i>S. J. Garina</i>	
<b>E02 Organization of Geodynamic Monitoring on the Basis of the Geoelectric Method</b> .....	227
<i>A. V. Grecheneva, N. V. Dorofeev, O. R. Kuzichkin, V. T. Eremenko</i>	
<b>E03 The New Approach to the Prediction of the Abnormally High Pressure in Cembrian Reservoirs at the Kovykta Gas-Condensate Field.....</b>	232
<i>A. V. Ilin, A. G. Vakhromeev, N. V. Misurkeeva, I. V. Buddo, Y. A. Agafonov, A. V. Pospeev, A. S. Smirnov, I. V. Gorlov</i>	
<b>E04 Prediction of Reservoirs Sitation by Integration of 3D CDP and 3D TEM on the Chonskiy Project.....</b>	237
<i>O. V. Tokareva, S. V. Kompaniets, D. A. Orlova, V. V. Gomulskii, A. V. Ostankov, E. V. Frolov, Y. G. Eremin</i>	
<b>E05 Experience a Combination of 1D and 3D Approaches Interpretation TEM-Data in Solving the Problems of Oil and Gas in Eastern Siberia</b> .....	241
<i>I. K. Seminskiy, I. Buddo, U. Agafonov, A. Belaya, G. Trigubovich</i>	
<b>E06 Efficient Water Survey Technology in Hard Rock with a Complex of Geophysical Methods</b> .....	246
<i>Y. E. Gavrilov, N. M. Andreev, L. N. Andreeva</i>	

## **POSTER SESSION**

<b>P01 Deep Velocity Structure Around Ulan-Ude (Eastern Baikal Region)</b> .....	251
<i>V. V. Mordvinova, M. Kobelev, M. Hritova, L. Tsydypova</i>	
<b>P02 Express Methodics of Geoinformational Processing of Geophysical and Low-quality Geochemical Data for Prospecting of Gold</b> .....	256
<i>A. V. Parshin, Y. A. Davidenko, S. N. Prosekin, N. A. Lavrentieva, A. E. Budjak</i>	
<b>P03 Geomagnetic Variations Due to Change in Groundwater Level</b> .....	261
<i>S. A. Riabova, D. N. Loktev, A. A. Spivak</i>	
<b>P06 Measurement of Magnetic Field over Design Features of the Unmanned Aerial Vehicle (UAV). Results of Bench Tests</b> .....	266
<i>A. Y. Palenov, L. A. Zolotaya, M. V. Kosnyreva, B. V. Sterligov</i>	
<b>P07 Example of Creation of Complex Geological Geophysical Model Onchromite Ore-Bearingregion (Naransky Ophiolitic Area)</b> .....	271
<i>L. A. Zolotaya, M. V. Kosnyreva, A. Y. Palenov, B. V. Sterligov</i>	
<b>P08 Geological and Mineralogical Features of Tails of Zhezkazgan Concentrating Factory as Technogenic Deposits</b> .....	274
<i>A. B. Baibatsha, A. B. Baibatsha, K. S. Duyssembayeva, A. A. Bekbotayeva</i>	
<b>P09 Оценка нефтегазонасыщенности терригенных коллекторов венда в западной части АЛС по результатам геохимических работ</b> .....	280
<i>N. P. Pastukhov, O. V. Kalinina, A. A. Krivoschokov</i>	
<b>P10 Thermodynamic Model of Hydrocarbons Generation Processes in the Riphean-Vendian Deposits of the Syugdzhersky Saddle</b> .....	285
<i>V. A. Bychinsky, N. P. Pastukhov, V. P. Isayev</i>	
<b>P11 Possibilities and Limitations of Detailed Facie Model Integration into 3D Geological and Simulation Models</b> .....	289
<i>O. A. Melnikova, E. Belyakov, E. Zhukovskaya</i>	
<b>Author Index</b>	