SUMMARIES

Alibayeva K.A., Tungatarova M.S., Bibossinov A.Zh., Kuljabekov A.B., Kaltayev A.: **Study of Uranium Extraction Process by the *in-situ* Leaching Method** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

In present work modeling of mineral extraction by the In-Situ Leaching (ISL) method is considered. The low concentration deposit of uranium, gold, boron and other minerals is mined by the In-Situ Leaching method. The hydrodynamic pressure equation, Darcy law, equation of mineral dissolution, equations of liquid solution and dissolved mineral transfer in layer are described the processes leaking in exploitation block in mining mineral by ISL method. Because of nonlinearity of pressure equation, in general case iterative method over relaxation is used to solve it. The velocity field is defined from Darcy's law using hydrodynamic pressure distribution. The system of mineral dissolution equation, fluid solution and dissolved mineral transfer equations are solved together. The algorithm of these equations is following: equation of reagent transfer is obtained on each time step with "classic" scheme. Using reagent distribution, mineral distribution on layer and concentration of dissolved useful component are defined from equation of mineral dissolution and transfer of dissloved mineral equation subsequently.The linear and hexagonal location of wells is considered. 3D fields of hydrodynamic pressure and velocity on layer under set of wells and the reagent distribution on layer, distribution of mineral in solid and fluid phase are obtained. The influence of wells location on rate and time of mineral extraction is investigated at the mining of mineral with ISL method.

Keywords: *mineral extraction, modeling, uranium*

Artymiuk J., Bednarz S.: **Importance of Guy Wire Ropes Forces Measurement for Safe Operation of Mast** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Drilling mast as a light steel mobile design commonly telescoped is provided for hoisting operations. Mast is deviated at few degrees in front to hole centerline at work position. Guy wire ropes stabilize mast and are part of its design. They are loaded from part of hook load during drilling operation and meeting to recommendation relative to tension forces values of guy wire ropes is very important in safety assurance. Drilling rig operation manual and proper standards include guy wire rope arrangement, tension forces and anchor capacities. Impact of tension forces in guy wire ropes on mast framework displacement has made visible by mast load tests carried out.

Keywords: *drilling mast, guy wire rope, forces, measurement*

Assilbekov B.K., Zhapbasbayev U.K., Zolotukhin A.B.: **Modeling of Two Phase Fluid Filtration in Reservoir with High Permeability Collector** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Bottom water flow in the layer with high permeability collector created by the radial drilling technology is considered. Dynamic of bottom water filtration to high permeability collector depending on properties of layer and layer fluid are investigated. Elaboration of mathematical model of fluid filtration in reservoir with high-permeability collector and calculations presents practical meaning for definition of radial drilling efficiency and estimation of flow rate to high permeability collector. Filtration of fluid in reservoir could be described with a model of cracked-porous medium by representing collector with high permeability as a crack. However for this model it is necessary to solve system of filtration equations in crack and porous block with satisfaction of conjugate condition on medium's division boundary. Problem formulation and solution is complicated for this model in case of two phase fluid filtration. Approach based on conception of interpenetrating continuums is simpler. In this case two phase fluid filtration in porous block with high permeability collector is described from a uniform position. Some numerical results of proposed generalized model of two phase fluid filtration from low permeability block to high permeability horizontal collector are implemented. Influence of reservoir anisotropy rate on well's water-

bearing, bottom water breaking time and dynamic of water-oil surface development in oil saturated layer are studied.

Keywords: *reservoir engineering , modeling, filtration*

Bednarz S., Artymiuk J., Lizończyk W.: **The Issue of Design and Operation of Drilling Equipment for Slimhole Drilling** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Slimhole drilling technology creates many challenges in design development. Different complexion of the matter depends on variety of drilling rigs and equipment use environment. Requirement of optimum design application is due to limited space conditions of drill bits and rods work. Material and manufacturing process selection comes into prominence on account of this. Safety management during operation of very complex systems controlled by operator is important issue.

Keywords: *drilling rig, small diameter bit, equipment maintenance, work safety*

Bergier T., Włodyka-Bergier A.: **BETX Removal from Motorway Runoff on Constructed Wetlands** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Due to the intensive motorway infrastructure development and the car traffic increase, the problem of the oil derivatives micropollutants in the human environment is more and more important. Thus the elaboration of the rational method of motorway runoff treatment is one of the most urgent challenges of the modern environmental engineering. In the developed countries, constructed wetlands have been widely used to treat this kind of wastewater.

In the paper, the research results on benzene, ethylbenzene, toluene and p,m,o-xylene (BETXs) removal on constructed wetlands have been presented. The researches have been realized as the pot experiments using two plant species: Common Reed (Phragmites Australis) and the energetic willow - Common Osier (Salix Viminalis). The control bed – without plants – has been also used. The researches have been conducted with use of model synthetic wastewater to simulate real motorway and parking runoff. Three initial BETX concentrations (1,076 $\mu g/dm^3$; 5,911 $\mu g/dm^3$; 9,010 $\mu g/dm^3$) have been analyzed, as well as three detention times (0 h; 3 h; 6 h) of wastewater in the experimental constructed wetland pots.

The experiments results have proved the high BETX removal effectiveness on the examined constructed wetland beds. The best results have been observed for the common reed bed; ethylbenzene, toluene and xylene have been totally removed from wastewater, for all initial concentrations, both for 3 h and 6 h detention time. Among all examined hydrocarbons, the lowest results have been observed for benzene, however its removal effectiveness was relatively high anyway.

Keywords: *constructed wetlands, motorway runoff treatment, BETX, aromatic hydrocarbons removal*

Brudnik K., Przybyło J., Winid B.: **Chemical and Discharge Changes of the WIII-9 Leakage as an Evaluation Element of a Risk of Flooding Wieliczka Salt Mine** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

WIII-9 leak is located on the third level of Wieliczka Salt Mine in the Koerber crosswise gallery in the area of "ash shelter" which was built during the Second World War or just after its finished. Slag from local boiler room was stored in this shelter by the use of three boreholes from the surface Slag was carried and placed in the nearby chambers. In the area of boreholes droplet leakages were reported since 1969. In 1987 boreholes were liquidated. Leakage discharge was reduced but it still exists in amount of about 0,1 l/min. The inflow is intaken in two places. Changes of this leakage during the dozen years were analyzed on the basis of the qualitative observations (salinity and SO4, Ca, Mg contest) and leakage discharge. It was speak about the main assumption of pouring boreholes insulation due to reducing a risk of this area excavation flooding. The main assumption of pouring boreholes insulation was discussed due to reducing the risk of flooding the excavation sites in this area.

Keywords: *hydrogeology, salt deposit, leaks*

Bujok P., Němec P., Němec J., Konečný P.: **Evaluation of Possibilities of CO_2 Geosequestration in Geological Structures of the Czech Republic** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The present-day emissions of carbon dioxide (CO_2) generated by anthropogenic activities and the expected future growing production of them are even now a serious ecological problem. One of possibilities of solving this situation is CO_2 storage, i.e. the building of CO_2 storage sites in suitable parts of the rock mass. They are represented, in addition to ideal localities, which are mined-out deposits of natural gas and oil, by selected geological formations of sedimentary Carboniferous deposits of hard coal, it means localities of closed underground hard coal mines provided that they are "tight" enough. For the purposes of CO_2 geosequestration, theoretically all closed hard coalfields exploited using the underground method in the Czech Republic can be considered, namely the Rosice-Oslavany (RUD), Kladno, Žacléř-Svatoňovice and Most Coalfields, and partial localities (closed mines) in the Czech part of Upper Silesian Hard Coal Basin (Ostrava-Karviná Coalfield). Of hydrocarbon deposits situated especially in the Vienna Basin, the Poddvorov, Nitkovice, Kostelany-východ and Ždánice-západ structures seem to be most promising.

Keywords: *carbon dioxide, CO_2 storage*

Dubiel S., Ziaja J.: **Analysis of Time of Break-Downs and Complications in Oil Drilling** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Some statistical data concerning failure-pronenes of oil drilling operations inPoland in the past and now are presented in the paper. Basing on industrial data and statistical analysis methods there were determined linear regression equations of time of specific drilling break-down removal depending on the depth of drilling. Such equations enable, e.g. predicting of the time of specific failures removal with a drill string, depending on the type of the break-down and the planned depth of the borehole at the moment the break-down.

Keywords: *oil drilling, break-downs, statistical analysis*

Dubiel S., Zubrzycki A.: **External Casing Gas Blow-Outs – the Analysis of Geological Settings and Technological Drilling Factors in the Area of Flysch Carpathians and Their Foredeep** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The paper examines reasons of external casing gas blow-out events during hydrocarbon explorations in the area of the Flysch Carpathians and their foredeep. On the basis of drilling and formation pressure data one describe how geological settings and technological drilling factors can affect on this type of drilling failures. The paper outlines the technology methods to prevent external casing gas flows as hazardous phenomena for natural environment.

Keywords: *petroleum drillings, drilling failures, external casing gas blow-outs, analysis of geological settings and technological drilling conditions in the area of the Flysch Carpathians and their foredeep*

Duşe D.-M., Duşe C.S.: **Quality Assurance of the Natural Gases Engineering Education in Romania** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

One of the key elements required for an efficient implementation of the provisions of the Bologna Declaration in Romania, as in all countries that aim to be part of the European Higher Education Area, is undoubtedly the assurance of academic quality in the higher education institutions. In Romania, the universities are assessed based on the Accreditation Law of 1993, but also, more recently, based on a new Methodology for quality assurance in the higher education, targeting the institutional capability, the institutional effectiveness and the quality management in the universities.

Based on the new methodology this paper outlines the main elements of the natural gases engineering study programme functioning within the "Lucian Blaga" and its compliance with the new legal and methodological provisions.

Keywords: *natural gas, engineering education*

Gonet A., Jamrozik A., Brylicki W., Czekaj L.: **Drilling Waste Management as Adds to Cement Slurries** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Certain quantities of waste is produced in oil industry during the drilling operations. Their are mainly used drilling fluids and drilling cuttings which create management problems. The increasing requirements of environmental protection force us to search for more effective methods of neutralizing, management and utilization of waste. The future methods treatment of drill waste is broadly comprehended recycling. The presented results concern the researches cement slurries prepared on base of cement metallurgical CEM III / A 32,5 with an addition of products of roasting of drilling wastes.

Keywords: *drilling waste, cement slurries*

Gonet A., Stryczek S., Szerszeń K.: **Applicability of DiWa-mix® to Geoengineering Works** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

A new binder DiWa-mix® was characterized in the paper. Its applicability to geoengineering works was specified on the basis of laboratory analyses, i.e. density, assumed viscosity, settling, filtration and yield point of liquid suspension as well as strength to uniaxial compression and filtration coefficient of set slurry.

Keywords: *geoengineering, concrete, DiW-mix*

Grigoraş I.D., Nicolescu Ş., Ionescu M.: **Rehabilitation Analysis of a Petroleum Reservoir from the Moesian Platform** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

WORK TARGETS
- geological model review;
- production history evaluation;
- recovery mechanism evaluation;
- resources re-evaluation;
- workovers proposal, new wells analysis, production prediction;
- discounted cash flow analysis;
- reserves re-evaluation.

FIELD DEVELOPMENT PLAN

Drilling a vertical oil & gas production well L1 in the block A at Permo-Triassic horizon (undeveloped proved reserves) as main target, during the year 2008 and at Triassic and Dogger horizons as secondary target (probable reserves):
- depth = 3300 m (vertically);
- reserves to be exploited from the year 2009.

Drilling a vertical oil & gas production well L2 in the block B at Triassic horizon (undeveloped proved reserves) as main target, during the year 2009 and at Dogger horizon as secondary target (probable reserves):
- depth = 3300 m (vertically);
- reserves to be exploited from the year 2010.

Depending on the results of the wells L1 and L2 a program will be developed for full field development. This is likely to require individual development of the main reservoir targets with the development of a pattern water flood using horizontal wells (probable reserves). Field facilities:
– 10 km gas pipeline till the main pipeline;
– three-phase separator + tank;
– old well conversion to residual water injection well;
– recovery and treating condensate plant;
– gas desiccation plant.

Keywords: *petroleum production, reservoir engineering; economical analysis*

Grygorczuk J., Seweryn K., Wawrzaszek R., Banaszkiewicz M., Rybus T.: **Moon's Subsurface Layers Exploration by Using "KRET" Penetrator** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Devices utilized in Moon's landing modules have to exhibit low energy consumption as well as low mass. One of the solutions fulfilling both, energy consumption and low mass is the penetrator. This article describes the penetrator KRET created by CBK PAN (Solar Physics Division – Polish Academy of Sciences). Penetrator KRET is a unique engineered construction designed for the Solar System studies.

Keywords: *penetrators*

Jewulski J., Zagrajczuk D.: **Application of Surfaceactive Compounds for Selective Water Insulation in Watered Production Wells** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

In paper theoretical background about application of surfaceactive compounds for selective water insulation is presented. Laboratory investigation of porous rock effective permeability changes caused by surface hydrophobization results are shown. Analysis was done for different rock (quartz-sand and calcareous-sand). Sulfapol E-20 and Rokanol DB-7 were used for water effective permeability changes analysis, Sulfapol E-20 was used for oil effective permeability changes analysis. Measurements were done for different surfactants concentration and temperatures. Results analysis was done.

Keywords: *exploitation, well, hydrophobization*

Kaliski M., Frączek P.: **Selected Factors Influencing the Changes in Energy Intensity in the Polish Economy** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

This paper describes the present-day situation and the forecasts for the world's demand for energy carriers, with particular emphasis on the forecasts related to EU countries and Poland.
On the basis of these reflections, the present situation as well as the perspectives of the energy intensity in Poland's economy have been evaluated. The following facts are enough to prove the growing importance of the problem mentioned: high energy intensity in Poland's economy as compared to other EU-27 countries and the expected increase in the energy consumption by its citizens, which may further add to the increased energy intensity in the economy.

Keywords: *energy intensity, energy policy*

Kaliski M., Jedynak Z.: **Factors Shaping World's Oil Prices in 2008** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Crude oil is the most desired raw material of the world, without which no state can function correctly. In the early 2008, nobody expected that its price would reach such record levels, only to plummet rapidly some time later.

However, the imperfection of the competition in this branch of petroleum made that only a threat of disruptions in the production was an impulse to speculation on the world's commercial merchandise exchanges. The purpose of article is to identify the phenomena which take place in the socio-economic environment in the world. The actions taken will make it possible to determine their influence on the level and dynamics of petroleum price changes in 2008. Besides, the article shows the particular consequences for consumers and producers as a result of unfavourable changes in the oil market. It presents available predictions for petroleum prices in 2009–2010.

Keywords: *oil, price, economy, restrictions*

Knez D.: **Choise of Jets for Jet-Grouting Operations** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Jet-grouting operations are used to reinforce and seal the ground. One of the most important elements influencing work performance is choice of jets. This paper presents computer simulation results of the grout flow. From practical point of view w/c ratio and jet diameter are key values and have to be adjusted correctly. Computer simulation helps to calculate distribution of pressure and velocity as a result of w/c and jet diameter change. What shows optimal jet choice method.

Keywords: *jet-grouting, jet choice method*

Lewkiewicz-Małysa A., Winid B.: **Interrelations among Chemical Components of the Iwonicz Anticline Mineral Waters** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The Iwonicz Anticline mineral waters are connected with the second and the third level of Ciężkowice sandstones. These are Cl-HCO_3-Na and HCO_3-Cl-Na type and are used for water treatment, curative bath and iodine bromide salt production. On the basis of chemical analysis carried out over last ten years, the proportion among the ions has been calculated and variability during the examined period of time have been compared. Iwonicz and Rymanów hydrochemical ratios speak about supplying water intakes from active zone of water exchange but also prove the co-existence of mineral waters and bitumin deposits. Most changes of variability are irregular. Observed minor increase of some ratios may speak about supplying water intakes with the infiltration component, what is beneficial, if there are no changes in mineralization of water.

Keywords: *high-mineralized water, ground water geochemistry, chemical ratios*

Matanović D., Simon K., Gaurina-Međimurec N., Borivoje Pašić B., Malnar M.: **Contribution in Testing Swelling Packers Behavior** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Effect of polymer swelling that was considered to be a problem, gives today a possibility, to complete wells that are a problem one for conventional packer setting and sealing.
Polymers (rubbers) can swell in hydrocarbons or water based fluids as well.
Several ways of application have been accepted. Mainly they are connected with open hole and sand screen completions in unconsolidated formations. The ability of changing the volume to more than several hundred percent, can help to avoid packer failure.
When defining swelling packer elements it is important to determine their mechanical properties, swelling speed in various fluids, and stability (ageing tests).
To implement home made products it was necessary to provide laboratory testing equipment for such purpose. The developed apparatus enables use of different fluids, temperature change up to known reservoir temperature, and pressure differential that element can withstand.

Keywords: *polymers, rubbers, swelling packers*

Mazáč J., Mikoláš M., Kurka M.: **About the Issue of Determination of Solid Rocks Position in the Coal Bed's Top Wall in Lignite Quarries Using Drilling Works** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Overburden mining in lignite quarries has to deal – among other difficulties – with the occurrence of rocky grounds. The mining and exploration of these rocks requires increased cots and implementation of special technologies. These rocks are coherent or incoherent bodies of various shapes, ticknesses, sizes and types of placement. These various types of rocky grounds are bound to different geological structures and types of mother soils, because they originate from various periods of diagenesis of top wall soils – clays and sands. Actual experiments using geophysical methods of occurrence examination of these solid rocks have not brought expected and necessary results there. The failure of application of geophysical methods (caused by their inaccuracy, small depth range, and problematic implementation in the conditions of the mine Bílina) proves that one of possible solutions, which would credibly specify the range and placement of solid sandstone bodies, is the utilization of drilling exploration in an inspissated boring network suitably chosen for this purpose. With the issue of determination of these solid rocks by use of drilling works deals this paper.

Keywords: *lignite, drilling*

Nguyen D., Miska S., Mengjiao Yu, Mitchell R.: **Temperature Profiles in Directional and Horizontal Wells – the Effect of Drag Forces** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Knowledge of temperature profiles in a wellbore is of considerable importance for accurate predictions of pressure losses, wellbore stability and drillstring failures. However, existing literature often neglects the effect of various heat sources on the behavior of drilling fluid temperature during different operations. In fact, the formation temperature in the vicinity of the wellbore is also affected, which could result in different formation rock behaviors and consequent wellbore stability problems. This study is conducted to examine the temperature profiles of drilling fluid and the near-wellbore formation, taking into account the effect of mechanical friction and associated heat sources.

A new model is proposed that is applicable to directional and horizontal wells. The model incorporates thermal effects due to the drag forces created from the contacts between drillpipe and casing/formation during drilling and tripping operations. It has been found that the wellbore curvature (dogleg severity) is the major factor influencing temperature profiles. The model is also utilized in a number of configurations of horizontal wells to study temperature profiles behaviors. It is observed that the drilling fluid temperature is noticeably under-predicted by existing literature, and in some cases it can easily exceed the geothermal formation temperature if mechanical friction is taken into account.

The proposed model and the results of this study are very useful for more accurate predictions of thermal regime in the wellbore at the design stage of well development, thereby, avoiding potential drilling fluid/drillstring overheating and wellbore stability problems.

Keywords: *drilling, directional and horizontal wells, effect of drag forces*

Pinka J.: **Gas Market and Development of Gas Technologies in Slovak Republic by 2010** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The development in Slovakia by 2010 and profitability of industrial branches of the national economy are under influence of the fuel and energy complex of the Slovak Republic not only for the prices of various kinds of energy, but also, as the branch with the highest investment, due to the demands for industrial production.

Keywords: *gas market, gas technologies*

Pinka J., Wittenberger G., Brestovič T.: **Nabucco Gas Pipeline – Possible Solution of Natural Gas to the Slovak Republic** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

EU signifies Nabucco gas pipeline as one of its priorities in effort of diversification of power sources and transport routes. There is still question-mark over its existence. The goal of Nabucco gas pipeline is to bring Caspian gas on EU markets and pass by Russian territory. In the second phase pipeline from Iran will be attached to it. Gas pipeline will start in Turkish town Erzurum and will route across Turkey, Bulgaria, Romania and Hungary to Austria where it will be attached to Baumgarten.

Keywords: *gas market, Nabucco gas pipeline*

Rado R., Lubaś J.: **Optimizing the Drilling Process for the PDC Drilling Bits 8 ½"** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Drilling tools with polycrystalline diamonds create great possibilities as far as selection of tools for specific drilling conditions are concerned. Their application is effective and contributes to increasing drilling coefficients. The recent design solutions enable efficient work when the weight on the bit is of 20 kN (2 T). With such a low weight on the bit it is possible to make BHA array and protect the drill string against unfavorable vibrations generated by tools operating at higher weights on the bit. The PCD tools may have considerable advancements and footage in optimized mechanical and hydraulic drilling parameters of these tools as well as suitable design of the lower part of the drill string. An attempt was undertaken at optimizing the drilling parameters for PDC 8 ½" for drilling operations in the Carpathian Forefield area.

Keywords: *drilling, PDC drilling bits, mathematical drilling model of PDC drilling bits*

Ropa C.E.: **The Modernization of Installation for Technological Process of CO_2 Purification and Liquefaction Separated from Mineral Water** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

CO_2 used in practice is obtained from natural sources and technological processes. In last years CO_2 used in pharmaceutical and food industry is obtained from natural sources. Because of that it is necessary to improve process of it treatment.
In this paper problems of gas drying on molecular sieve, hydrocarbon adsorption on active carbon and deep desulfurization on impregnated active carbon were presented on example of CO2 separated from mineral water. Selection of these technologies of CO_2 treatment come from method of management than gas.

Keywords: *drilling, PDC drilling bits, mathematical drilling model of PDC drilling bits*

Rzyczniak M., Chrząszcz W.: **Modern Electronic Downhole Manometers and Thermometers to Applied for Testing in Wells** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Modern electronic downhole manometers and thermometers, of Leutert company and AMEtrolog company production are described in this article. They are applied for testing in production wells and testing rerservoir rocks during drilling of holes.There characterized basic parameters of measurements instruments without internal memory, working in system of continuous measurement and monitoring, triped to the holes with line, as well as the instruments with internal memory, applied to tests of reservoir rocks layers and applied for drill-stem tests.

Keywords: *downhole measuring devices, testing in wells*

Seredyuk V., Psyuk M.: **The Method for Increasing the Efficiency of Asphalt-Resin--Paraffin Deposits Inhibitors** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

One of the principal and undesirable kinds of complications in oil production on many fields is a formation of asphalt-resin-paraffin deposits (ARPD) on the surface of inner downhole equipment. This in turn results in substantial expenses for paraffin removal and production maintenance of wells, and also to the decline of oil production and considerable shortage and losses of oil.This paper covers the results of lab research about the concentration of the paraffins, asphaltenes and resins in the oils of the field of Ukraine.

Keywords: *oil, asphalt-resin-parafin deposits*

Solecki T.: **Monitoring of the Hydrocarbons in Groundwater in the Area of Well Protection Zone Located Close to the Fuel Station** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

This paper presents results of the investigations of the groundwater quality in the neighbourhood of the installations that theoretically could be a source of groundwater pollution. Results of the monitoring measurements of the hydrocarbons content in groundwater samples have been statistically analysed and reported on the control monitoring chart, for the period of the 2002–2008. The experimental water samples were taken quarterly and they were grouped in 22 series.

Keywords: *groundwater monitoring, hydrocarbons*

Sroka A., Tajduś K.: **Determination of Surface Subsidence above Underground Oil and Gas Exploitation** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Underground exploitation lead to decrease a fluid pressure inside porous rock mass and to the disturbances of initial state of stress inside a strata. Consequently, it cause a deformation of porous deposit which can be describe by Biot's theory. It's produce a movements of overburden rock mass reaching to the surface. Article presents the method which allow to determinate the subsidence for every point on the surface based on classical theory of geomechanics and Knothe's theory. It allow to take into consideration a three-dimensional geometry of fluid deposit, properties of rock mass and value of pore-pressure. In article, authors presents a model prognosis of surface subsidence received for a one deposit in Western Europe.

Keywords: *surface subsidence, slope, Knothe's theory, 3D forecast*

Stefãnescu D.P., Petrescu V.: **Natural Gas Companies' Trends and Perspectives in Production, Storage and Consumption of Natural Gas** • Drilling Oil and Gas 2003 • Volume 26 • No. 1–2

The history of natural gas exploitation has an important role in the Romanian economical evolution. 100 years of gas activity represents a period when the event from the beginning of the last century, that of discovering the natural gas in Transylvania, subsequently changed in an important economical segment with a infrastructure of considerable dimensions.

Keywords: *gas, Romanian economy*

Stryczek S., Gonet A., Czapik P.: **Developing Technological Properties of Sealing Slurries with the Use of Cement Dust** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Environmental protection is growing in significance nowadays, therefore it is vital to search for potential additives to sealing slurries among waste products generated by various branches of industry, e.g. cement industry. It has been generally accepted that cement industry does not produce waste as small quantities of alkaline dust by-product are partly re-used at various stages of the production process. Hence a question whether or not the use of such a by-product as cement dust can be employed as additives to develop technological properties of slurries for sealing and reinforcing ground and rock mass media.The results of laboratory analyses of influence of various concentrations (20, 30, 40%) of cement dust coming from Małogoszcz Cement Plant on technological parameters of fresh and set sealing slurries of various water-to-mixture ratios were presented in the paper.As a result, optimum concentrations of cement ashes were established for sealing slurries to be used in geoengineering works.

Keywords: *concrete, rheology, environmental protection*

Stryczek S., Gonet A., Wiśniowski R., Sadłos M.: **Influence of Rudniki Cement Dust Concentration on Rheological Properties of Sealing Slurries** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The admixing of various mineral additives to sealing slurries enables modification of their technological properties, especially rheological parameters, thus necessitating the proper selection of a suitable rheological model and its parameters. The selection of the right rheological model affects the accuracy of calculation of the sealing fluid flow resistance in a circulation system when the casing pipes are being cemented. The influence of concentration of cement dust from Rudniki Cement Plant on rheological parameters of fresh sealing slurries based on Portland cement CEM I – 42,5 R has been presented based on the results of laboratory analyses. The sealing slurries were analyzed in view of the most optimum rheological model for a given cement dust concentration and water-to-binder ratio. Accordingly, a numerical program Rheosolution worked out at the Department of Drilling and Geoengineering AGH-UST has been used.

Keywords: *concrete, rheology*

Stryczek S., Wiśniowski R., Gonet A., Ferens W.: **Rheological Parameters of Fresh Sealing Slurries Depending on the Time of Their Preparation** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The selection of casing cementation technology in view of geologic, reservoir and technological conditions is largely conditioned ob. the physical and chemical parameters of hydraulic binders and also physicochemical properties of fresh and then set cement. Sealing slurries should have suitable technological properties, enabling their optimum operation in the borehole. Sealing slurries should have a strictly defined time of setting, good pumpability over the cementation process. Their rheological and technological properties should have little variability under high temperature and pressure changes in deep borehole conditions. Rheological parameters of fresh sealing slurry, regulated by all kinds of additives and admixtures should guarantee efficient pumping out of drilling mud from the annular space. The results of analyses of cementation time on changes of rheological parameters of sealing slurries based on Portland cement CEM I 42,5 R are presented in the paper.Measurements were performed in various spans of time. Over the first two hours after thorough mixing of the slurry, the measurements were made every half an hour, then every hour. The maximum time after which the measurements were made was 6 hrs. The investigations covered rheological properties of slurries with a viscometer Chan 35, Ford cup no. 4 and fluidity with a truncated cone AzNII.

Keywords: *concrete, rheology*

Stuglik J.: **The Importance of Coherence in the Strategic Management of the Main Companies of the Fuel-Energy Sector of the Polish Energy Security Strategy** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

In this article the author presents a problem with the importance of coherence of the strategic objectives of the individual companies from the fuel and energy sector with the Polish energy security strategy. In the material the author draws attention to the particularly important questions:

- Are the methods and techniques of strategic management applied and implemented in key businesses in fuel the energy sector, as well as chemical and mining can count on achieving the intended objectives?
- Can we talk about the consistency of assumptions adopted in the development strategies of individual companies with the objectives contained in the Polish energy security strategy and these assumptions from the European Council policy?
- What are – and are they function – mechanisms of control, verification, modification used to ensure consistency of assumptions and actions of individual companies with the Polish energy security strategy?

Of course, in such a short publication we can't answer such questions. But you can, and should, raise the important question - the importance of consistency in the strategic management of fuel-energy sector with the Polish energy security strategy.

Keywords: *strategic management, strategy of development, energy security polish*

Tataru A., Stefanescu D.P., Simescu B.: **Using Well Testing to Confirm the Suspected Reservoir Model by Seismic Investigations** • Drilling Oil and Gas 2003 • Volume 26 • No. 1–2

The activity of seismic surveys is very complex and has the purpose to investigate the underground, in order to discover productive geological structures and various relations among the already known structures. More often, lately, there are looked for subtle traps in the areas with complicated geology, fact that requires more attention in the projection and execution of acquisition works, as well as the processing and interpretation of the gathered information. An area intensively researched lately is the Eastern area of Romania, a very troubled area from a tectonic point of view, with many structural traps and very many faults. In this region, our company emphasised several hydrocarbon accumulations of lenticular form.

Keywords: *reservoir models, seismic investigations*

Warowny W., Lorenc M.: **Utilization of Gas Hydrate Formation** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Gas hydrates (clathrate hydrates) forms non-stoichiometry solid solutions compose with condensed hydrate substances closed into water crystalline lattice. Clathrates are not chemical compounds, because lattice of water crystal is stabilized by hydrogen bonds, while van der Waals forces answer for water molecules and hydrate substances influences. Their specific physical properties are utilize in various industrial fields, mainly in natural gas industry, because methane hydrate have the greatest importance. Fundamental task are now is preventing of hydrates formation in production chain (production, storage, transportation) of natural gas and crude oil, that is why to research of new prevention methods, mainly various inhibitors (kinetic, thermodynamic, dispersive, mixed) and modifiers. Many countries intensively research of storage and transport of natural gas in the hydrate form, with regard to stability in room temperature, quite low pressure and the possibility of high pressure generation without compressor application. Many researches are about surfactants which accelerate hydrates growth. Next technologies concern of purification and/or separating sour gases (carbon dioxide, hydrogen sulfide) from natural gas and synthetic gas (hydrogen + carbon oxide). Hydrate formation method allows to selectively separation one component from the mixture and distribution of boilingnear substances as well. Hydrate formation phenomenon is make

use of desalinate sea water, paper production, food production, heat storage, and sequestration of carbon dioxide on the sea bed. Water vapor pressure over hydrates is lower than over pure water, which enable to gas drying.More often is thinking of methane production from huge deposits of methane hydrates. Production from deposit rest on destabilization methane through well known conditionings from pipelines unpluging 1) adding strong hydrogen bonds chemical substances (inhibitor), 2) increasing temperature of deposit using water vapor or hot water and gas production through another well, 3) pressure decrease in the well below stability point of hydrate formation and bottom plant to hydrates gathering from the sea bed and transport equipment onto the ship. However, above-mentioned proposals will be hard to carry out on to large scale in case of technical, economical and environmental reasons.

Keywords: *gas, gas hydrates*

Wilk S., Galas M., Mijal M.: **Reconstruction of Gas Pipelines Located in Unsteady Grounds (Heavily Watered Grounds, Moors, Marshlands)** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

This paper presents process of analysis of the conception and planning solutions as well as field measurements for the DN 700 gas pipeline, characterized by high pressure, carried out in Ruda Łańcucka. Reconstructed pipeline had been located on extremely unsteady, heavily watered ground. Article covers implementation process of the reconstruction.

Keywords: *pipelines, marshlands, moors, unsteady grounds*

Wysocki S., Bielewicz D., Wysocka M.: **Application of New Cationic-Nonionic Copolymer in HDD Muds – Laboratory Research** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

One of the most important in HDD technology is a drilling mud with specific properties. In this paper the results of cationic-nonionic copolymer KaCoPoli-3 application in drilling mud are presented. Tested mud charakterize with good technological properties, it gives good perspectives of industrial development.

Keywords: *horizontal directional drilling (HDD), drilling mud, polymers*

Wysocki S., Bielewicz D., Wysocka M.: **Floculation of Bentonite Suspensions and Drillig Muds with New Cationic Floculants Using** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

The authors present the results of lab tests on new synthetic cationic flocculants PT-floc-201107 which are used to reduce volume of bentonite suspensions and drilling mud. The optical method was used to investigate the mud flocculation process and moving time of the phase separation boundary. The lab tests indicated that the PT-floc-201107 polymers are suitable for phase separation of drilling mud and aqueous suspensions of silty minerals which are rather difficult to separate.

Keywords: *flocculation, cationic flocculants, drilling muds*

Wysocki S., Dubiel S., Dyndor D., Boniecki Ł., Wysocka M.: **Clay Modifications with Biopolymer PT 300308 for HDD Muds** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

Horizontal Directional Drilling is classified as trenchless technology. Specific character of HDD caused specific parameters of drilling mud. This drilling method is utilized on terrains with roads, highways, railway tracks, canals,

rivers, and highly urbanized areas, where direct pit under the ground is impossible. Trenchless technologies such as HDD have more advantages than the traditional methods. Not only do they shorten time necessary for dig-up, but also the pipelines used during drilling can be placed in any desired position under any territorial barrier. In addition, HDD does not disturb public transportation and most importantly, does not devastate the environment, which makes it the commonly used technology in the construction industry. Specific character of HDD caused specific parameters of drilling mud. Searching innovated solutions is important to fulfill increasing technological requirements. The article presents the final results of the technological parameters HDD mud, designed on bentonit OCMA, and modified by biopolymer PT 300308. Obtained results show possibility for industrial application.

Keywords: *drilling mud, bentonite mud, HDD, biopolymers*

Ziaja J., Molińska W.: **Stabilization of Horizontal Borehole Walls as a Factor Determining Its Performance** • Drilling Oil and Gas 2009 • Volume 26 • No. 1–2

During the construction the underground installations with the aid of trenchless technologies, there may appear many complications characteristic to the implemented technology. Horizontal directional drilling (HDD) and Microtunelling are the most popular methods of building underground installations. One of the problems, which could cause difficulties during the horizontally directed drilling is the instability of the hole. Near-well zone stability is determined by three main factors: drilling fluid character of the flow in the bore-hole, internal pressure and drilling fluid's rheological parameters. The article presents the results of the measurements of drilling fluids most often used in trenchless technologies. In the analysis several drilling fluids prepared with two different bentonits and different additives were examined. Rheological parameters, especially filtration, were compared and on such basis were chosen those, which are the best in near-well zone stabilization. Also, the influence of the sort of water applied to preparing the drilling fluid on its rheological parameters, filtration and bore-hole stability were analysed.

Keywords: *horizontal directional drilling (HDD), drilling mud, Stabilization of Horizontal Borehole Walls*