SUMMARIES

Assilbekov B.K., Bekibaev T.T., Kabdulov S.Z., Sakhariev B.B., Zhapbasbayev U.K., Kenzhaliev B.K.: **Modeling of oil displacement by the injection of hot water through high permeable well radial channels** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

In this paper we investigate the efficiency of water-oil displacement by injecting hot water into the stratum through the highly permeable radial channels, created by jetting method of drilling. Increasing of the oil recovery factor and the volume of cumulative production by 7–12% showed as a result of our calculations.

Keywords: *oil displacement, jetting method*

Fabia B., Bielewicz D., Stachowicz A.: **The research on efficiency of corrosion inhibitors for selected types of steel in the acid environment** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

The most commonly used method in intensification of hydrocarbon production is acid treatment. It is connected with corrosion of production pipes. The aim of the research was to determine effectiveness of four corrosion inhibitors: ACI 130A, AI 600, Antykor PP, SAFE-COR which are used in the industry and Inhibitor PPT which was created on the Faculty of Drilling, Oil and Gas, at the AGH University of Science and Technology.
The research was conducted on temperature of 20 ^{o}C (293.15 K) and 60 ^{o}C (333.15 K) on five samples of different types of steel strength (according to nomenclature API: J-55, K-55, L-80, N-80 and P-110).
The most effective inhibitors and the most resistant types of steel were selected as materials in production of production pipes.

Keywords: *corrosion, corrosion inhibitors, acid treatment*

Gąszcz K., Suchar M., Wysocki S.: **Polyglycol mud for drilling in clay and shales** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

Drilling a wellbore in formations containing water-sensitive shales can cause many serious technical problems. Especially mud which enable safe drilling in shales and clays formations must be characterized not only by features of standard modern mud, but also has to reduce water adsorption and thus hydration of clays and shales.
This paper was prepared so as to present the results of laboratory investigation in which a glycol and ion – polymer fluid based on potassium salt was made. Obtained mud is characterized by high-temperature resistance, good rheological properties, low water loss and resistance to salt ions.

Keywords: *mud, poliglycol, clay and shales, hydration, laboratory tests, potassium, polymers*

Hendel J., Złotkowski A., Stryczek S.: **Laboratory's position to measuring permeability of cement rock samples** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

The qualification of permeability cement rock is very difficult process, which success depends from good tightening and correct measuring value of liquid by sample filtration. Lower permeability, typical for cement rock, requires use high pressure. Investigation then will be exact, if the volume of liquid filtration will be considerable. Therefore to get high volume liquid to measurement was adapted filtration press HPHT (High Pressure, High Temperature), which give possibility to make this research in pressure 8 MPa.

Keywords: *permeability, cement slurry, cementing wells*

Kabdulov S., Jiyembayeva K., Kaliev B., Mankhanova A.: **Production logging test in horizontal wells** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

Horizontal drilling technology has significantly influenced the industry's approach to the development and recovery of hydrocarbons. Advances in drilling technology have led to improved well productivity, increased drainage areas, especially in low permeability reservoirs. These day companies adopted an approach that has assigned a high priority to monitoring horizontal wells in order to maximize benefits.
The testing and logging programs are aimed to assess the flow profile of the horizontal wells, optimize well production rates and plan future production and workover strategies. For this reason development of new methods and technologies has become crucial.
This paper covers peculiarities of production logging test techniques used in horizontal wells. This includes technological as well as technical innovations based on deeper understanding of the phenomena through detailed research of this area.

Keywords: *horizontal drilling, production logging test*

Knez D., Megao E., Knez J., Śliwa T.: **Influence of drilling direction on wellbore stresses** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

The transposed in-situ stress state relative to the borehole coordinate system (Cartesian borehole coordinate system) and the total stress component at the borehole wall (cylindrical coordinate system) exhibits cyclic behaviour with respect to drilling direction of borehole with respect to σ_H, β. On the other hand, with varying borehole inclination, α, the stress either increases or decreases with increasing α angles. Consequently the effective maximum, σ_1 and average, σ_2 principal stresses exhibits the same behaviour. It can be concluded generally that the effective principal stress state of a wellbore would vary in a cyclic behaviour and would have a maximum and minimum stress points. From these observations, it is obvious that in any situation, optimal combinations of α and β will have to be established before drilling is commenced in order to optimise stability of the borehole.

Keywords: *wellbore stability, wellbore stresses, well path*

Knez D., Śliwa T.: **Technological aspects of shale gas deposits fracturing** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

Paper presents technological aspects of tight reservoirs hydraulic fracturing operations. Fracturing is known in Petroleum industry from 1947. Oil and natural gas prizes growth caused significant increase in scientific research financial support. In last 20 years conventional drilling and completion technologies were improved as well as new techniques were developed. Also wellbore stimulation made very large progress. World demand for natural gas forced development of tight gas reserves. The most successful stimulation technology in shale gas fields accurse hydraulic fracturing. Some technological aspects of this process are described in the paper.

Keywords: *shale gas, hydraulic fracturing, stimulation technology*

Rzyczniak M.: **The application of the Marshall CBR press in examining the resistance to curving** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

In the article, there is described the position and the method of testing the resistance to curving the hardened cement mortars and rocks with the application of the PM-CBR press equipped with the burdening arrangement. There is a description of recording and presenting the results of the examination. Moreover, there was applied a graph of the resistance to curving, a table with test points and the results of the calculations.

Keywords: *mechanical proprieties, resistance to curving, cement mortars, the Marshall CBR press*

Solecki T.: **Hydrocarbon pollution of soil and groundwater in the fuel station located in Książ Wielki** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

At the fuel station located in Książ Wielki were an uncontrolled spill of petroleum products into soil and groundwater. The investigation of the environmental quality shown, that quality standards for soil and groundwater in the hydrocarbon content were exceeded. The paper presents the scope and results of environmental tests, which were related to standards of soil and groundwater quality. Based on an analysis of environmental quality and on the analysis of the geological, hydrogeological and hydrographical conditions, were shown environment and public safety risks.

Keywords: *hydrocarbons in soil, hydrocarbons in groundwater, soil quality standards, groundwater quality standards*

Stec M., Bazan G.: **Designing of densities of formate brines** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

The main subject of this paper is designing of densities of formate based brines (sodium, potassium and cesium formate). It contains the chemical basis of primary properties of formate based brines, the clean brines densities rates and equations together with tables showing the way of preparing the brine with the density as a set value using the powder, standard brine stock or mixture of individual salts or their solution.

Keywords: *drilling mud, brine, potassium formate, sodium formate, cesium formate, density, formate based brine, formate based mud system*

Stryczek S., Sowa M., Śliwa T., Gonet A., Sapińska-Śliwa A.: **Fresh cement slurries research with addition of graphite** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

The borehole heat exchangers is preferably applied grout sealant with high thermal conductivity. Then improve the conditions of heat exchange between the rock mass and the surface area. The article provides the results of fresh sealing slurries research based on cement with the addition of graphite. Graphite increases the thermal conductivity of the hardened grout sealing.

Keywords: *borehole heat exchangers, borehole sealing, cement grout*

Śliwa T., Mazur M., Gonet A., Sapińska-Śliwa A.: **Hammers-rotary drilling for geoenergetics** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

Hammer-rotary drilling have long been known. Currently experiencing its second youth thanks to technology DTH (down the hole). Drilling such a large scale is used to perform borehole heat exchangers, especially in hard rocks. In large installations, underground thermal energy storages is sometimes necessary to drill tens and even hundreds of boreholes. Was needed so quickly quarrying technique while maintaining the vertical holes. For this purpose, has been adapted down the hole drilling.

Keywords: *down the hole drilling (DTH), drilling, geoenergetics*

Wysocki S., Hypsior B., Wróblewski T.: **Laboratory tests newly drawn up non-clay, glycol-potassium drilling mud with the new polymer PT-52 intended to drill clay rocks** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

Examinations are being conducted on the basis of the polyglycol mud with using new PT-52 polymer, as the incriminating evidence chalk is applied. Examinations include the test of the lubricity, of clay beams,

immu-noassay temperature and measurement of standard rheological parameters of the mud. Experience is being conducted on two muds, first with using the incriminating evidence (chalks) and of idle mud. Using two muds will let us determine the influence of the incriminating evidence on the quality of the prepared mud.

Keywords: *drilling mud, polymer PT-52, polyglycol*

Złotkowski A., Macuda J., Śliwa T.: **Environmental aspects of executing and exploitation underground heat exchangers** • Drilling Oil and Gas 2011 • Volume 28 • No. 4

The use ground as reservoir of low temperature heat to heat pumps heating and cooling system is connected with necessity installing underground heat exchangers. Therefore pure energy from earth causes decreasing greenhouse gases to atmosphere and improvement of state of environment. The realization of installation taking the energy from the ground and they exploitation make possible pronouncement damage for place, where execute underground heat exchangers. Near good practice threats this are possible to limit to minimum. In this paper describe some faults influence on surroundings during drilling and exploitation of underground heat exchangers system.

Keywords: *underground heat exchanger, heat pump, environmental*