1. Gas generator passing through the oil pipe used for high energy gas fracturing

Wu, Jin-jun
Source: *Journal of Engineering and Applied Science*, v 11, n 3, p 28-30, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: The paper designed a gas generator used for HEGF. Its feature is that it passes through the oil pipe. In the process of HEGF, the oil pipes needn't be raised out of the hole. Its effect is the same as normal generators. The oil-gas output will be increased and the cost will be reduced. By calculating its strength and testing the ignition system in the static state, it is believed that the structure of this gas generator is reasonable and its ignition performance is reliable. It can be directly used in the oil fields. It provides a new, simple and effective way of applying HEGF technology to the oil fields. (3 refs)
Main heading: Gas generators
Controlled terms: Natural gas - Fracturing (oil wells) - Pipe - Crude petroleum - Combustion - Structural design
Uncontrolled terms: High energy gas fracturing - Static ignition
Classification Code: 522 Gas Fuels - 511.1 - 619.1 - 521.1
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

2. Research of knowledge representation and inference model for expert system for diagnosing formation damage

Xu, Yingzhuo ; Guo, Jianming
Source: *Jisuanji Gongcheng/Computer Engineering*, v 22, n 1, p 27-31, 50, Jan 20 1996; **Language:** Chinese; **ISSN:** 10003428
Database: Compendex
Data Provider: Engineering Village

3. Effects of environmental factors on the measurements of logging while drilling

Shi, Jianhua
Source: *Journal of Engineering and Applied Science*, v 11, n 3, p 31-34, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: Logging while drilling (LWD) is a relatively new technology. Analysing and discussing the effects of environmental parameters on its measurements is good for its further application and spreading. Effects of environmental parameters include borehole size, drilling rate, invasion depth and formation exposure time, etc. Analysis and comparison of LWD measurements with natural gamma ray, neutron porosity and resistivity logging measurements show that in many cases LWD can provide more accurate data than cable sensors and can improve the final interpretation. (10 refs)
Main heading: Well logging
Controlled terms: Environmental impact - Boreholes - Drilling - Gamma rays - Neutrons - Porosity - Sensors - Electric logging - Neutron logging
Uncontrolled terms: Logging while drilling - Natural gamma ray - Gamma ray logging
Classification Code: 512.1.1 Oil Fields - 512.2.2 - 932.1 - 931.2
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

4. Finite element analysis of vibration collision characteristics of drill stem with the sidewall

Zhang, Guang-wei
Source: *Journal of Engineering and Applied Science*, v 11, n 6, p 20-22, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: The lateral vibration equation of collision between the drill stem and the sidewall was derived with the effects of drilling fluid outside the drill stem considered. A computation model for analyzing the characteristics of vibration and collision by finite element method is presented. The collision force is described by nonlinear spring and nonlinear damper. The calculated results show that the clearance between the drill stem and the sidewall affects the frequency

response of the drill stem and the impact. The result of the research may be used as a reference for avoiding skew wear of the drill stem and predicting its service life. (2 refs)
Main heading: Oil well drilling equipment
Controlled terms: Vibrations (mechanical) - Drilling fluids - Finite element method - Mathematical models - Frequency response
Uncontrolled terms: Drill stem - Sidewall collision - Lateral vibrations
Classification Code: 511.2 Oil Field Equipment - 931.1 - 803 - 921.6 - 921 - 731.1
Treatment: Theoretical (THR) - Applications (APP)
Database: Compendex
Data Provider: Engineering Village

5. On the structure of client/server system

Wei, Xiao-feng
Source: *Journal of Engineering and Applied Science*, v 11, n 5, p 47-49, 1996; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: The composing principles, features, developing tools and the future tendency of the client/server system are described. The application of the software DBMS in the environment of client/server system is also discussed. (2 refs)
Main heading: Computer architecture
Controlled terms: Database systems - Computer terminals - Computer networks - Information science
Uncontrolled terms: Client server system
Classification Code: 723 Computer Software, Data Handling and Applications - 723.3 - 722.2 - 903
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

6. On the forecasting model of crude oil and well drilling cost

Gao, Yan-yun
Source: *Journal of Engineering and Applied Science*, v 11, n 6, p 46-49, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: In view of the fluctuation regulation of oil and well drilling cost in three oil fields of eastern China this paper approached the main factors affecting the oil and well drilling cost. Two forecasting models were established: (1) forecasting model of oil and gas cost and accumulated oil output with the accumulated oil or gas output being used as independent variable; (2) forecasting model of well drilling cost based on the relationship of well drilling cost, accumulated drilling meters and the drilled depth of each drilling rig per month with the accumulated drilling depth and the drilled depth of each rig per month being used as independent variable. The forecasting model of time-series analysis proved the feasibility of the models. The above two models were used to forecast the oil and well drilling cost in L Oil Field in the period from 1996 to 2000. In order to test the feasibility of the forecasting models, the author checked the original cost data in the period from 1985 to 1993. It is proved that the models are reliable and good at simulating and forecasting. (2 refs)
Main heading: Exploratory oil well drilling
Controlled terms: Cost effectiveness - Cost accounting - Mathematical models - Time series analysis - Correlation methods
Uncontrolled terms: Tendency extrapolation - Drill depth
Classification Code: 511.1 Oil Field Production Operations - 911.2 - 911.1 - 921 - 922.2
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

7. On the kinetics of exchange reactions of W(V1) and Mo(V1) within macroporous anion exchange resin (D290) phase

Wang, Yu-kun
Source: *Journal of Engineering and Applied Science*, v 11, n 6, p 39-41, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute

Abstract: The exchange behaviors of WO42-, Mo42-, H2W12O406- and MO8O264- anions within macroporous exchange resin (D290) phases were studied. The values of diffusion constant (B), inner diffusion coefficient (D over-bar), retarded time (#d), half-aging period (#½) activation energy (#E) were found from the kinetic analyses. A new method of separating N(V1)and MO (V1) from each other is put forward. (3 refs)
Main heading: Ion exchange
Controlled terms: Reaction kinetics - Porous materials - Diffusion in solids - Activation energy - Adsorption - Separation - Phase composition - Ion exchange resins
Uncontrolled terms: Macroporous anion exchange resins
Classification Code: 802.2 Chemical Reactions - 931.2 - 933 - 801.4 - 931.3 - 802.3
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

8. Development and application of a integrated software system for reservoir protection

Li, Qi
Source: *Shi You Zuan Cai Gong Yi/Oil Drilling and Production Technology*, v 18, n 6, p 36-41, Dec 1996; **Language:** Chinese; **ISSN:** 10007393
Database: Compendex
Data Provider: Engineering Village

9. Economic model for the design optimization of gas transmission pipeline

Dong, Zhengyuan
Source: *You Qi Chu Yun/Oil & Gas Storage and Transportation*, v 15, n 1, p 16-19, Jan 25 1996; **Language:** Chinese; **ISSN:** 10008241
Database: Compendex
Data Provider: Engineering Village

10. Natural mode of torsional vibration of direct-current motor-driven rotary table-drillstring system

Chen, Chaoda
Source: *Shiyou Jixie/China Petroleum Machinery*, v 24, n 1, p 14-19, Jan 1996; **Language:** Chinese; **ISSN:** 10014578
Database: Compendex
Data Provider: Engineering Village

11. Analytical analysis of casing friction in horizontal wells

Wang, Jian-jun
Source: *Journal of Engineering and Applied Science*, v 11, n 6, p 17-19, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: The casing friction in horizontal wells was investigated theoretically. In establishing the mechanic model, the friction in tripping process was taken into consideration. The differential equations of casing friction were established and their analytical solutions were obtained. The solutions can be conveniently used to estimate the casing friction in the tripping process. As an example, the casing friction of a horizontal well-Saiping-1 was calculated by using the formulas given in this paper. It is shown that the calculated results are in fairly good agreement with the measured values. (5 refs)
Main heading: Horizontal wells
Controlled terms: Oil well casings - Friction - Mathematical models - Differential equations - Numerical analysis - Directional drilling
Uncontrolled terms: Directional well - Tripping process
Classification Code: 512.1.1 Oil Fields - 511.2 - 931.1 - 921 - 921.2 - 921.6
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

12. Distribution of free radicals in colloid and its orientation in micelles

Wang, Yu-kun
Source: *Journal of Engineering and Applied Science*, v 11, n 3, p 35-37, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: A series of tailed 2,2,6,6-tetramethyl-piperdine-1-oxygen nitroxide free radicals with different chain hydrocarbon groups were synthesized. Their electron selfspinning resonance (ESR) spectrum was determined. The effects of 4-substituent and the polarity of solvent on ESR spectrum were studied. The orientation effects of these tailed piperdine nitroxide molecules free radicals in the micelles of colloid solvent where surfactants formed were investigated. (9 refs)
Main heading: Free radicals
Controlled terms: Colloids - Micelles - Surface active agents - Paramagnetic resonance - Oxides - Hydrocarbons - Synthesis (chemical) - Electron spin resonance spectroscopy - Molecules
Uncontrolled terms: Electron self spinning resonance - Tetramethyl piperdine oxygen nitroxide - Electron self spinning resonance
Classification Code: 804 Chemical Products Generally - 801.3 - 803 - 701.2 - 804.2 - 804.1
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

13. Features of mudstone compaction in Yanchang FM of North Shaanxi

Liu, Yong
Source: *Journal of Engineering and Applied Science*, v 11, n 2, p 42-45, 1996; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: Based on the mudstone compaction curves of exploratory wells, a comprehensive study was made on the features of mudstone compaction in Yanchang FM of North Shaanxi slope of Shaanxi-Gansu-Ningxia Basin. The results show that the normal compaction trend is clear and consistent and the under-compaction generally developed in the YC4+5 oil-bearing and YC6 oil bearing FM. The minimum sonic value which keeps equilibrium between the compaction and water drainage is 225 μm/s and the denudation of the overburden amounts to 1800 to approximately 2500 m. The under-compaction of the mudstone is one of the main motive power of oil and gas migration in this region. (4 refs)
Main heading: Petroleum reservoirs
Controlled terms: Sedimentary rocks - Compaction - Crude petroleum - Exploratory oil well drilling - Erosion
Uncontrolled terms: Mudstone compaction - Shanxi-Gansu-Ningxia basin - Minimum sonic value - Oil motive power - Gas migration
Classification Code: 512.1.1 Oil Fields - 482.2 - 512.1 - 511.1 - 483
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

14. Evaluating validity of cationic polymer clay stabilizer

Wu, Xinmin ; Luo, Pingya
Source: *Shi You Zuan Cai Gong Yi/Oil Drilling and Production Technology*, v 18, n 1, p 28-32, Feb 1996; **Language:** Chinese; **ISSN:** 10007393
Database: Compendex
Data Provider: Engineering Village

15. Study on demulsifiers modified by acrylic acid

Xu, Jia-ye
Source: *Journal of Engineering and Applied Science*, v 11, n 6, p 36-38, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: Synthesis, identification and demulsification properties of the demulsifiers modified by acrylic acid were studied. It is shown that the dewatering ability of some modified demulsifiers is better than the original. (4 refs)
Main heading: Demulsification

Controlled terms: Synthesis (chemical) - Dewatering - Chemical modification - Agents - Organic acids
Uncontrolled terms: Acrylic acid - Demulsifiers
Classification Code: 802.3 Chemical Operations - 802.2 - 803 - 804.1
Treatment: General review (GEN) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

16. Optimum economic model of heated oil transportation by pipe line

Dong, Zhen-yuan
Source: *Journal of Engineering and Applied Science*, v 11, n 3, p 23-27, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: For the purpose of reducing the operation cost in the transportation of heated oil by pipe line, the main components of operation cost during steady state operation were analysed. A new optimum operation economic model of heated oil transportation by pipe line is presented by using the sum of unit heating power cost and unit electricity power cost, i.e. unit energy consumption cost during the heated oil transportation as object function. The model considered the effects of the real distribution of oil temperature along the pipe line on oil heating properties and fluid dynamic properties and the effects of transportation rate on pump efficiency. A practical calculation shows that this model reflects all the affecting factors and is accurate. Its convergence speed is fast and it has better numeric steadiness. The calculated value is equal to the practical operation value of pump efficiency. (4 refs)
Main heading: Crude petroleum
Controlled terms: Petroleum transportation - Petroleum pipelines - Mathematical models - Economics - Costs - Energy utilization - Heating - Calculations - Fluid dynamics - Convergence of numerical methods - Optimization
Uncontrolled terms: Heated oil transportation - Electricity power costs
Classification Code: 523 Liquid Fuels - 511.1 - 619.1 - 921 - 911.2 - 911.1
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

17. Study of microscopic oil displacement efficiency of Leng-43 gravel reservoir of Viscous crude oil, Liaohe oil field

Yongli, Gao
Source: *Journal of Engineering and Applied Science*, v 11, n 4, p 35-36, 1996; **Language:** Chinese; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: Six simulated micro-models of the formation were made by using the core casting slices of Well Leng 43 - 54 - 566. The water driving mechanism in the gravel viscous oil reservoir was directly observed by taking the physical simulation techniques of micro-visualization, image analysis technique and by using the microscope and videorecorder. The influence of crude oil's viscosity and the formation porosity on the mechanism and efficiency of oil displacement was analysed. The paper also analysed the distribution features of residual oil and presents corresponding conclusions.
Main heading: Petroleum reservoirs
Controlled terms: Crude petroleum - Efficiency - Mathematical models - Oil bearing formations - Viscous flow - Computer simulation - Visualization - Image analysis - Microscopes - Porosity - Viscosity
Uncontrolled terms: Microscopic oil displacement efficiency - Micro visualization - Viscous crude oil - Liaohe oil fields - Core casting slices - Water driving mechanism
Classification Code: 512.1.1 Oil Fields - 512.1 - 921.6 - 723.5 - 741.3 - 931.2
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

18. Experiments on the effects of mechanical vibration on core permeability

Ma, Jian-guo
Source: *Journal of Engineering and Applied Science*, v 11, n 5, p 8-11, 1996; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute

Abstract: The paper introduces a series of experiments on the effects of mechanical vibration on core permeability. In the experiments, 32 cores were used which included naturally exposed sandstone cores, oil field sandstone cores and cores with bound water. The effects of vibration frequency and strength on the core permeability were observed. The results showed that when the vibration frequency was close to the core's eigen-frequency, the core's permeability was greatly improved. For the naturally exposed sandstone cores, the maximum value of raised permeability reached 27.8%. For the sandstone cores with bound water, the value of permeability raised was doubled. But if the frequency did not fit, the permeability was lowered down. The core permeability was not sensitive to the vibration strength. But when the strength was in the range of 0.05 g to approximately 0.2 g, the permeability was affected to a certain degree. When the direction of the core changed, the results were almost the same.
Main heading: Core analysis
Controlled terms: Mechanical permeability - Vibrations (mechanical) - Natural frequencies - Sandstone
Uncontrolled terms: Vibration frequency - Vibration strength
Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 931.2 - 931.1 - 482.2
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

19. Two different types of basins in the west margin of Eerduosi basin

Shimin, Su
Source: *Journal of Engineering and Applied Science*, v 11, n 4, p 21-24, 1996; **Language:** Chinese; **ISSN:** 11101903;
Publisher: Xi'an Petroleum Institute
Abstract: The west margin of Eerduosi Basin is a south-north running thrust belt, where the North China platform in the east part of China and west geosyncline join together. Because of the distinctive tectonic location, two different types of basins formed: Liupanshan Basin and Yinchuan Basin. On the basis of the analysis and research of the tectonic characteristics, formation and evolution, it is deemed that Liupanshan Basin is a compression basin formed in Mesozoic era and Cenozoic era, and Yinchuan Basin is an early extension and late pull-apart basin in Cenozoic era. (3 refs)
Main heading: Tectonics
Controlled terms: Landforms - Failure analysis - Geophysics - Geophysical prospecting - Earth (planet)
Uncontrolled terms: Eerduosi basin - South north running thrust belt - Mesozoic era - Cenozoic era - Tectonic characteristics - Thrust fault
Classification Code: 481.1 Geology - 481.3 - 481.4
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

20. Some remarks on energy compensating device for sucker rod pumps

Wu, Yijiong
Source: *Shiyou Jixie/China Petroleum Machinery*, v 24, n 12, p 28-32, 51, Dec 1996; **Language:** Chinese; **ISSN:** 10014578
Database: Compendex
Data Provider: Engineering Village

21. Analysis of torque on crank pin of beam pumping units

Zhu, Xiaoping
Source: *Shiyou Jixie/China Petroleum Machinery*, v 24, n 10, p 11-14, Oct 1996; **Language:** Chinese; **ISSN:** 10014578
Database: Compendex
Data Provider: Engineering Village

22. Tectonic evolution and hydrocarbon distribution of Dawa-Changtu depression

Sun, Dongsheng

Source: *Journal of Engineering and Applied Science*, v 11, n 2, p 46-49, 1996; **ISSN:** 11101903; **Publisher:** Xi'an Petroleum Institute
Abstract: Dawa-Changtu depression is a subsidiary and negative tectonic unit in Tieling-Changtu Basin, which is an early faulted and late depressed sag developed from late Jurassic to early Cretaceous period on Vatiscan geosycline fold belt. According to the tectonic and sedimentary characteristics and also the tectonic characteristics in Mesozoic era of East China, its evolution process can be divided into four stages, i.e. pregnancy, faulting, depressing and shrivelling stages. Dynamic mechanism of depression evolution was studied by using the theory of plate tectonic. Favourable exploiting section was demonstrated after considering the tectonic control over the source-reservoir cap. (4 refs)
Main heading: Petroleum reservoirs
Controlled terms: Tectonics - Rock mechanics - Sedimentology - Petroleum geology
Uncontrolled terms: Dawa-Changtu depression - Jurassic period - Cretaceous period - Mesozoic era - Source reservoir cap
Classification Code: 512.1.1 Oil Fields - 481.1 - 483.1 - 512.1
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

23. Pore structure of the reservoir and its control over the distribution of oil and water in ZhiLuo oil field

Liu, Yong (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 12-14, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: By studying the pore structure of the reservoir and the distribution of oil water of the second oil-bearing layer of Yanchang FM, Zhiluo Oil Field, this paper analyses the control of pore structure feature of low permeability reservoir over the distribution of oil and water. Results show that smaller secondary pores are the main pore type in the second oil-bearing layer of Yanchang FM, Yanchang Oil Field. Inhomogeneity of pore structure is serious. The dimensions of pores and the throat are small and the throat sorting are rather poor. All those features result in poor production of water-free oil. The interval producing oil and water together is as thick as 185.7m. The oil-bearing layer is one producing oil mixed with water, so a sandstone reservoir which produces unbounded water, bottom water and oil mixed with water formed.
Main heading: Petroleum reservoirs
Controlled terms: Crude petroleum - Mechanical permeability - Oil fields - Petroleum geology - Porosity - Sandstone - Water
Uncontrolled terms: Inhomogeneity - Oil bearing layers - Pore structure
Classification Code: 481.1 Geology - 482.2 Minerals - 512.1.1 Oil Fields - 523 Liquid Fuels - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

24. Studies on the ternary system La(ClO4)3 &middot 3H2O - 18C6 - CH3COCH3 at 25°C

Qian-ding, Li (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 53-56, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The phase equilibrium behaviors of ternary system, La(ClO4)3&middot3H2O - 18C6 - CH3COCH3 at 25°C were investigated using the semimicro method. The refraction indexes of the saturated solution have been determined and the curves of refraction indexes were drawn. Results show that there are two kinds of coordination compounds formed in this system. The mole ratio, H2O/La(ClO4)3, is found to be always 3:1, no matter it is in liquid or solid phase. (3 refs)
Main heading: Ternary systems
Controlled terms: Lanthanum compounds - Optical variables measurement - Phase diagrams - Phase equilibria - Refractive index - Solubility - Solutions - Water

Uncontrolled terms: Coordination compounds - Crownether - Lanthanum perchloride - Mole ratio - Saturated solution - Semimicro method
Classification Code: 531.1 Metallurgy - 741.1 Light/Optics - 801.4 Physical Chemistry - 804.2 Inorganic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids - 941.4 Optical Variables Measurements
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

25. On the forecasting model of crude oil and well drilling cost

Gao, Yan-yun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 46-49, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In view of the fluctuation regulation of oil and well drilling cost in three oil fields of eastern China this paper approached the main factors affecting the oil and well drilling cost. Two forecasting models were established: (1) forecasting model of oil and gas cost and accumulated oil output with the accumulated oil or gas output being used as independent variable; (2) forecasting model of well drilling cost based on the relationship of well drilling cost, accumulated drilling meters and the drilled depth of each drilling rig per month with the accumulated drilling depth and the drilled depth of each rig per month being used as independent variable. The forecasting model of time-series analysis proved the feasibility of the models. The above two models were used to forecast the oil and well drilling cost in L Oil Field in the period from 1996 to 2000. In order to test the feasibility of the forecasting models, the author checked the original cost data in the period from 1985 to 1993. It is proved that the models are reliable and good at simulating and forecasting. (2 refs)
Main heading: Exploratory oil well drilling
Controlled terms: Correlation methods - Cost accounting - Cost effectiveness - Mathematical models - Time series analysis
Uncontrolled terms: Drill depth - Tendency extrapolation
Classification Code: 511.1 Oil Field Production Operations - 911.1 Cost Accounting - 911.2 Industrial Economics - 921 Mathematics - 922.2 Mathematical Statistics
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

26. Discussion on chaos in longitudinal vibration of petroleum drill stem

Qu, Zhan (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 23-25, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: On the basis of nonlinear drill stem vibration mathematical model set by M. M. Khasanow, a former soviet scientist and by using the recent achievements in nonlinear science field, this paper discusses chaos motion problem which might occurs in the drill stem vibration. The necessary conditions for the occurring of chaos motion in drill stem vibration was sought out by using Melnikov method. Reference foundations are provided for appropriately choosing parameters so as to avoid complex borehole problems. (1 refs)
Main heading: Oil well drilling equipment
Controlled terms: Chaos theory - Exploratory boreholes - Mathematical models - Nonlinear equations - Parameter estimation - Vibrations (mechanical)
Uncontrolled terms: Chaos motion problems - Drill stem mechanics - Longitudinal vibrations - Melnikov method
Classification Code: 511.2 Oil Field Equipment - 921 Mathematics - 922 Statistical Methods - 931.1 Mechanics
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

27. On the kinetics of exchange reactions of W(V1) and Mo(V1) within macroporous anion exchange resin (D290) phase

Wang, Yu-kun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 39-41, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The exchange behaviors of WO42-, Mo42-, H2W12O406- and MO8O264- anions within macroporous exchange resin (D290) phases were studied. The values of diffusion constant (B), inner diffusion coefficient (D^{-}), retarded time (#d), half-aging period (τ 1/2) activation energy (#E) were found from the kinetic analyses. A new method of separating N(V1)and MO (V1) from each other is put forward. (3 refs)
Main heading: Ion exchange
Controlled terms: Activation energy - Adsorption - Diffusion in solids - Ion exchange resins - Phase composition - Porous materials - Reaction kinetics - Separation
Uncontrolled terms: Macroporous anion exchange resins
Classification Code: 801.4 Physical Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 931.3 Atomic and Molecular Physics - 933 Solid State Physics
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

28. Buckling analysis of pipe string in a vertical borehole

Gao, Guo-hua (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 33-35, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The buckling equation of pipe string in a vertical borehole derived in this paper is a four order non-linear differential equation with a small parameter E. There are three types of solution to the equation as E varies. The pipe string keep stable when $E>E\#$ and the equation has no non-zero solution. When #mc, the pipe string buckles in pseudo - sinusoidal (plane) form and in helical form as #&le#m. An asymptotic solution and then the critical value #m and critical load for helical buckling have been obtained. The bending moment, normal force between the pipe string and the borehole, and the longitudinal movement of the pipe string, etc. are investigated as well. (4 refs)
Main heading: Boreholes
Controlled terms: Bending (deformation) - Buckling - Differential equations - Dynamics - Loads (forces) - Nonlinear equations - Numerical methods - Pipe
Uncontrolled terms: Asymptotic solution - Bending moment - Buckling analysis - Critical load - Nonlinear differential equations - Pipe string - Vertical borehole
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 511.1 Oil Field Production Operations - 619.1 Pipe, Piping and Pipelines - 921.2 Calculus - 921.6 Numerical Methods - 931.1 Mechanics
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

29. Sedimentary features of turbidites in the third submember of Shahejie formation, Huzhuangji Oil Field

Lai, Weiqing (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 35-37, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Besides developing Bouma sequence, the turbidite in the third submember of Shahejie formation, Huzhuangji Oil Field developed various parasyngennetic deformed structures, flute casts, large scale cross beddings, wave ripple cross beddings and deep water trace fossils. The turbidite complex body belongs to a turbid fan system. The channel turbidite is composed of high density gravel and sand sequence. The non-channel turbidite consists of classic turbidites with Bouma sequence. (5 refs)
Main heading: Oil bearing formations
Controlled terms: Oil fields - Petroleum geology - Petroleum reservoirs - Stratigraphy
Uncontrolled terms: Bouma sequence - Huzhuangji oil field - Shahejie formation - Turbidites
Classification Code: 481.1 Geology - 512.1 Petroleum Deposits - 512.1.1 Oil Fields
Treatment: General review (GEN)

Database: Compendex
Data Provider: Engineering Village

30. Two different types of basins in the west margin of Eerduosi basin

Shimin, Su (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 21-24, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The west margin of Eerduosi Basin is a south-north running thrust belt, where the North China platform in the east part of China and west geosyncline join together. Because of the distinctive tectonic location, two different types of basins formed: Liupanshan Basin and Yinchuan Basin. On the basis of the analysis and research of the tectonic characteristics, formation and evolution, it is deemed that Liupanshan Basin is a compression basin formed in Mesozoic era and Cenozoic era, and Yinchuan Basin is an early extension and late pull-apart basin in Cenozoic era. (3 refs)
Main heading: Tectonics
Controlled terms: Earth (planet) - Failure analysis - Geophysical prospecting - Geophysics - Landforms
Uncontrolled terms: Cenozoic era - Eerduosi basin - Mesozoic era - South north running thrust belt - Tectonic characteristics - Thrust fault
Classification Code: 481.1 Geology - 481.3 Geophysics - 481.4 Geophysical Prospecting
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

31. On the structure of client/server system

Wei, Xiao-feng (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 47-49, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The composing principles, features, developing tools and the future tendency of the client/server system are described. The application of the software DBMS in the environment of client/server system is also discussed. (2 refs)
Main heading: Computer architecture
Controlled terms: Computer networks - Computer terminals - Database systems - Information science
Uncontrolled terms: Client server system
Classification Code: 722.2 Computer Peripheral Equipment - 723 Computer Software, Data Handling and Applications - 723.3 Database Systems - 903 Information Science
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

32. Effect of heat treatment on anti-corrosion features of Ni-P plating

Yu-guang, Fan (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 40-41, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The non-crystal Ni-P plating has very good anti-corrosion and anti-abrasion feature. Low temperature heat treatment can further improve the feature of anti-abrasion but deteriorate the feature of anti-corrosion. In this paper, the potentiokinetic method was used to deal with the effect of low temperature heat treatment on the anti-corrosion feature of Ni-P plating. The natural electrode potential, natural electrode current and polarization curves of the Ni-P plating after 200°C, 400°C, 550°C heat treatment and without heat treatment were obtained. The results show that the temperature of heat treatment affect the anti-corrosion feature of Ni-P plating greatly. In 0.5M H2SO4 the anti-corrosion feature of the plating with 400°C heat treatment is the worst. Its corrosion rate is 8 times higher than that without heat treatment. In 3% NaCl the anti-corrosion feature of the plating with 500°C heat treatment is the worst, its corrosion rate is 3 times higher than that without heat treatment. It's because of the plating's non-crystal into crystal conversion and the deformation of organic structure. (2 refs)
Main heading: Nickel plating

Controlled terms: Corrosion resistance - Electric currents - Electrochemical electrodes - Heat treatment - Kinetic theory - Polarization - Thermal effects
Uncontrolled terms: Anticorrosion feature - Corrosion rate - Corrosivity - Electrode potential - Heat treatment effect - Nickel phosphorus plating - Polarization curves - Potentiokinetic method
Classification Code: 537.1 Heat Treatment Processes - 539.3 Metal Plating - 548.1 Nickel - 701.1 Electricity: Basic Concepts and Phenomena
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

33. Research on the conditions of hydrocarbon expelling from source rock in Huangkou depression

Jin, Xiao-hui (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 15-18, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The quantitative evaluation of oil and gas resource is based on the expulsion conditions of the source rock. By the compaction curve method which is based on mudstone compaction principle and geochemical method, the palaedepth of hydrocarbon starting to expel from source rock discused was determined to be 3130m. Eoceneapprox.Oligocene, Oligocene and early Tertiary are the main hydrocarbon expulsion periods for Wennan FM, Fenshuiling FM and Permo-carboniferous periods respectively. The pressure compartment has the greatest chance of receiving hydrocarbon because it is located in the relatively low excessive pressure direction, has multi-confluence and is adjacent to the source rock. It is pointed out that Wennan FM(J1approx.2) and Permo-carboniferous period in western Huangkou depression are more payable hydrocarbon source rock interval. Oligocene is an important hydrocarbon expulsion and migration-accumulation period. In order to reduce the exploring risk, the oil-gas cumulative quantity which is produced by source rock in different geologic periods must be calculated. (3 refs)
Main heading: Hydrocarbons
Controlled terms: Compaction - Geochemistry - Petroleum geology - Rocks
Uncontrolled terms: Compaction curve method - Eocene - Geochemical method - Huangkou depression - Mudstone compaction principle - Oligocene
Classification Code: 481.1 Geology - 481.2 Geochemistry - 512.1 Petroleum Deposits - 804.1 Organic Compounds
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

34. Synergetic expert system for reservoir identification, evaluation, diagnosis and treatment

Jian-ming, Guo (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 48-52, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: A multi-base synergistic expert system (MBSFS) is introduced which includes the overall process in protecting the reservoir domain. The system is combined with the comprehensive database system of the Chinese Petroleum and Gas Company and the current data treatment software concerned. When applied in oil fields, the system can obtain good effects. (3 refs)
Main heading: Expert systems
Controlled terms: Computer software - Data processing - Database systems - Oil bearing formations - Oil fields - Petroleum reservoir evaluation - Petroleum reservoirs
Uncontrolled terms: Formation damage prevention - Multibase synergetic expert systems - Reservoir identification
Classification Code: 512.1.1 Oil Fields - 723.1 Computer Programming - 723.2 Data Processing and Image Processing - 723.3 Database Systems - 723.4.1 Expert Systems
Treatment: Applications (APP) - General review (GEN)
Database: Compendex
Data Provider: Engineering Village

35. Reducing nitrogen oxides emission from pipe-heaters

Ruan, Jingshi (1)
Source: *Petroleum Refinery Engineering*, v 26, n 5, p 54-56, Sep 25 1996; **Language:** Chinese; **ISSN:** 1002106X; **Publisher:** Petrochem Eng Corp
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Three types of nitrogen oxides produced during combustion in pipe-heaters were introduced. Several ways of reducing the NOx emissions abroad were discussed in detail, providing references for domestic applications. (8 refs)
Main heading: Gas emissions
Controlled terms: Air pollution control - Combustion - Flue gases - Gas burners - Heat pipes - Nitrogen oxides
Uncontrolled terms: Denitrogenation - Domestic applications - Emission reduction - Pipe heaters
Classification Code: 451.1 Air Pollution Sources - 451.2 Air Pollution Control - 521.1 Fuel Combustion - 521.3 Fuel Burners - 619.1 Pipe, Piping and Pipelines - 804.2 Inorganic Compounds
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

36. Optimum economic model of heated oil transportation by pipe line

Dong, Zhen-yuan (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 23-27, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: For the purpose of reducing the operation cost in the transportation of heated oil by pipe line, the main components of operation cost during steady state operation were analysed. A new optimum operation economic model of heated oil transportation by pipe line is presented by using the sum of unit heating power cost and unit electricity power cost, i.e. unit energy consumption cost during the heated oil transportation as object function. The model considered the effects of the real distribution of oil temperature along the pipe line on oil heating properties and fluid dynamic properties and the effects of transportation rate on pump efficiency. A practical calculation shows that this model reflects all the affecting factors and is accurate. Its convergence speed is fast and it has better numeric steadiness. The calculated value is equal to the practical operation value of pump efficiency. (4 refs)
Main heading: Crude petroleum
Controlled terms: Calculations - Convergence of numerical methods - Costs - Economics - Energy utilization - Fluid dynamics - Heating - Mathematical models - Optimization - Petroleum pipelines - Petroleum transportation
Uncontrolled terms: Electricity power costs - Heated oil transportation
Classification Code: 511.1 Oil Field Production Operations - 523 Liquid Fuels - 619.1 Pipe, Piping and Pipelines - 911.1 Cost Accounting - 911.2 Industrial Economics - 921 Mathematics
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

37. Preliminary study on the types of sedimentary facies of Majuanzi reservoir in Niuji Oil Field

Lai, Weiqing (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 28-29, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Majuanzi reservoir is the main productive formation in Niuju Oil Field. Its depositional environment is fluviallacustrine facies. The onshore braided fluvial sedimentary system consists of sedimentary element at the stream channel basel and stream channel filled sedimentary element of sand bar. The subaqueous braided channel deposits changed into finer grains and the stream channel sand bar was poorly developed and changed into winding stream channel. Besides subaqueous channel sand bodies, sand bars and sand sheets coexisted with channel deposits. These sand bodies formed the main layered reservoir.
Main heading: Petroleum reservoirs
Controlled terms: Oil bearing formations - Oil fields - Petroleum geology - Sand - Sedimentary rocks
Uncontrolled terms: Fluviallacustrine facies - Majuanzi reservoir - Niuji oil field
Classification Code: 481.1 Geology - 482.2 Minerals - 483.1 Soils and Soil Mechanics - 511 Oil Field Equipment and Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields

Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

38. New type of stepless speed regulation system for battery-powered vehicles

Cheng, Wei-bin (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 44-46, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: At present, most of the vehicles have their speed regulated by DC-chopper, which has higher requirement to the components and results in larger ripples of the output and greater loss of the energy. The paper presents a new type of stepless speed regulation system for battery powered vehicles, which makes the current supplied to the electric motor smoother than that of the existing DC-chopper. With the self-adaptable regulation mode, the output voltage can be regulated continuously. It is easy to start steadily and realize stepless speed regulation. It is a substitute for the existing control system. (3 refs)
Main heading: Speed regulators
Controlled terms: Electric current distribution - Self adjusting control systems - Storage battery vehicles - Voltage control - Voltage regulators
Uncontrolled terms: Stepless speed regulation system
Classification Code: 662.1 Automobiles - 701.1 Electricity: Basic Concepts and Phenomena - 702.1.2 Secondary Batteries - 731.1 Control Systems - 731.3 Specific Variables Control - 732.1 Control Equipment
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

39. Application of polyelectrolyte in the treatment of oily sewage

Chengtun, Qu (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 45-47, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Oily sewage is a by-product of oil production. Because of its corrosiveness, scaling and pollution to environment, a great deal of attention has been paid to the treatment of oily sewage. Flocculation and sedimentation is one of the most important methods. In this method, chemicals are used to form floccules with suspensions in sewage, then the floccules are separated from water. The chemicals mostly used is polyelectrolyte. The paper points out the special requirement for PH value when inorganic polyelectrolyte is used to treat oily sewage. Flocculation is formed mainly by neutralization and capturing of charges. The obtained floccules are small and easy to break. Organic polyelectrolyte has no special requirement for PH value and the flocculation is formed mainly by adsorption and forming bridges. The floccules are big and solid. S0 for treating oily sewage, it is better to use both inorganic and organic polyelectrolyte. (8 refs)
Main heading: Sewage treatment
Controlled terms: Adsorption - Flocculation - Oil well production - Polyelectrolytes - Sedimentation - Suspensions (fluids)
Uncontrolled terms: Floccules - Inorganic polyelectrolytes - Neutralization - Oily sewage treatment
Classification Code: 452.2 Sewage Treatment - 511.1 Oil Field Production Operations - 802.3 Chemical Operations - 804 Chemical Products Generally - 815.1.1 Organic Polymers
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

40. Testing of fracture toughness of welds by using multisection method

Li, Doing-cai (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 35-38, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: Experiment research and theoretical calculation show that the number of determinable regions in HAZ of welds by using the multisection method to measure fracture toughness is related to the following factors: plate thickness, specimen thickness, heat input, preheat temperature and groove angle of the specimen, etc. The #is value of the regions can not all be measured. The paper also discussed some technical problems relating to improving the measuring accuracy. (10 refs)
Main heading: Welds
Controlled terms: Fracture testing - Fracture toughness - Heat affected zone - Mechanical variables measurement - Numerical methods
Uncontrolled terms: Groove angle - Heat input - Multielement method - Plate thickness - Specimen thickness
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 538.2 Welding - 921.6 Numerical Methods - 943.2 Mechanical Variables Measurements
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

41. Forming conditions and characteristics of Palaeokarst

Baoqing, Wang (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 8-10, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Karst refers to the physical structures formed by the dissolution of meteoric waters. Palaeokarst is a karst formed during geological history. Two conditions are necessary for forming the karst: the fluid must be unsaturated with respect to the country rock, and the fluid of unsaturated carbonate must be able to transport the products of dissolution far away from the site of reaction. In karst areas, karst system is divided into a vadose zone and a phreatic zone on the basis of water table. The material foundation of karst carbonate, mainly formed between 40 degrees north and south latitude. Disconformities, denudation pores, caves, fissures and fractures, karst breccias and conglomerates, and karst geomorphic features are macroscopic characteristics of karst. Both trace elements content of carbonate rocks and the isotopic value for the stabilization of oxygen and hydrogen in karst areas reflect the characteristics of meteoric water. (4 refs)
Main heading: Geomorphology
Controlled terms: Carbonates - Composition - Dissolution - Hydrogen - Oxygen - Physical properties - Sedimentary rocks - Stability - Trace elements - Water
Uncontrolled terms: Carbonate rocks - Denudation pores - Disconformity - Karst system - Macroscopic characteristics - Meteoric water - Palaeokarst - Phreatic zone - Unsaturated carbonates - Vadose zone
Classification Code: 481.1.1 Geomorphology - 482.2 Minerals - 801.2 Biochemistry - 801.4 Physical Chemistry - 802.3 Chemical Operations - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

42. Research on the characteristics of adsorption and desorption of cationic polymer on the surface of clay

Wu, Xin-ming (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 38-41, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The characteristics of adsorption and desorption of cationic polymer on the surface of montmorillonite was studied carefully by using the starch-cadmium iodide colouring method in this paper. The influences of both the molecular weight and the cationicity of cationic polymer on the characteristics of its adsorption and the influence of the adsorbed amount of cationic polymer on the surface of montmorillonite on its desorption were also studied in this paper. The results are: (1) The shape of adsorption isotherm of cationic polymer on montmorillonite is similar to that of Langmuir adsorption isotherm. When the molecular weight of cationic polymer increased, the saturate adsorption amount increased. But when the cationicity of cationic polymer increased, the adsorption amount decreased; (2) The greater the adsorption amount of cationic polymer on the surface of montmorillonite was, the higher the desorption velocity would be; (3) When the cationic polymer started to desorb on the surface of montmorillonite, the desorption

was very fast and then it slowed down. These results provide a base for the further research on the development of clay stabilizer of organic cationic polymer. (8 refs)
Main heading: Organic polymers
Controlled terms: Adsorption - Adsorption isotherms - Cadmium compounds - Clay minerals - Desorption - Molecular weight - Stabilizers (agents) - Starch - Surfaces
Uncontrolled terms: Cadmium iodide - Cationicity - Clay stabilizer - Langmuir adsorption isotherms - Montmorillonite - Organic cationic polymers
Classification Code: 482.2 Minerals - 483.1 Soils and Soil Mechanics - 802.3 Chemical Operations - 804.1 Organic Compounds - 804.2 Inorganic Compounds - 815.1.1 Organic Polymers
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

43. Experiments on the effects of mechanical vibration on core permeability

Ma, Jian-guo (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 8-11, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper introduces a series of experiments on the effects of mechanical vibration on core permeability. In the experiments, 32 cores were used which included naturally exposed sandstone cores, oil field sandstone cores and cores with bound water. The effects of vibration frequency and strength on the core permeability were observed. The results showed that when the vibration frequency was close to the core's eigen-frequency, the core's permeability was greatly improved. For the naturally exposed sandstone cores, the maximum value of raised permeability reached 27.8%. For the sandstone cores with bound water, the value of permeability raised was doubled. But if the frequency did not fit, the permeability was lowered down. The core permeability was not sensitive to the vibration strength. But when the strength was in the range of 0.05 g to approximately 0.2 g, the permeability was affected to a certain degree. When the direction of the core changed, the results were almost the same.
Main heading: Core analysis
Controlled terms: Mechanical permeability - Natural frequencies - Sandstone - Vibrations (mechanical)
Uncontrolled terms: Vibration frequency - Vibration strength
Classification Code: 482.2 Minerals - 512.1.2 Petroleum Deposits : Development Operations - 931.1 Mechanics - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

44. Mathematical model for predicting the fines' dispersing and migration in reservoir pores

Chunsheng, Pu (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 37-41, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper describes quantitatively the laws of fines' deposition, dispersing and migration by using the fundamental colloid chemistry theory and principles of hydrodynamics. The conditions for determining fines' dispersing and migration during water flood process are presented. The major force system that controls fines' dispersing and migration is quantitatively analysed. In the presented model, both the hydrodynamical factors and colloidal surface chemistry factors affecting the fines' dispersing and migration were considered. The results indicate that under various formation conditions, different surface electric characteristics have quite different effects on the fines' dispersing and migration. And the injection-production rate has always been an important factor affecting the fines' migration. (4 refs)
Main heading: Petroleum reservoirs
Controlled terms: Colloid chemistry - Deposition - Dispersion (waves) - Electric properties - Hydrodynamics - Mathematical models - Oil bearing formations - Oil well flooding - Particles (particulate matter) - Water injection
Uncontrolled terms: Fines deposition - Fines dispersion - Fines migration - Injection production rate - Reservoir pores
Classification Code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 631.1.1 Liquid Dynamics - 801.3 Colloid Chemistry - 802.3 Chemical Operations - 921.6 Numerical Methods
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex

Data Provider: Engineering Village

45. Recognition of well test interpretation model by artificial neural network

Qiang, Lin (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 32-35, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: With different well test interpretation models, the pressure derivative plot was used as training examples to be trained with BP network. The trained network can recognize the well test interpretation model according to the practical well test data. The paper tested the BP network by using the simulated data, incomplete data, noisy data and a field well test data with even pressure. The results show that artificial neural network can correctly recognize well test data interpretation model and incomplete and noisy data as well. Artificial neural network technology has effectively improved the pattern recognition methods used at present. It's worth spreading and applying. (8 refs)
Main heading: Oil well testing
Controlled terms: Backpropagation - Computer simulation - Data reduction - Neural networks - Pattern recognition - Well pressure
Uncontrolled terms: Pressure derivative plot - Well test interpretation
Classification Code: 461.1 Biomedical Engineering - 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 716 Telecommunication; Radar, Radio and Television - 723.4 Artificial Intelligence - 723.5 Computer Applications
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

46. Determination of the watered out grades by neural network technique

Luo, Jihong (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 54-56, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In the oil-field development period, it is very important to determine the grades of watered out, because it can help to know the oil-field development conditions, determine the distribution of the remaining oil and work out the development plan for the later development period. Neural network has very strong self-learning and spreading abilities. Practical examples of applying this technique to determine the grades of watered out in certain oil field have proved its effectiveness and practicality. (2 refs)
Main heading: Oil field development
Controlled terms: Crude petroleum - Neural networks - Petroleum reservoirs
Uncontrolled terms: Watered out grades
Classification Code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 723.4 Artificial Intelligence
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

47. FD-TD method for studying transient electro-magnetic waves propagating and dispersing in chromatic dispersion media

Haiwei, Fu (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 48-50, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In view of the plasma of strong chromatic dispersion and proceeding from the microcosmic mechanism of plasma affected by electro-magnetic field, a set of time domain finite difference equations were derived. This has overcome the defects of recursive convolution method which is not suitable for the incident pulse with D. C component and incidence of big signals. The correctness of this method has been demonstrated by the amplitude-frequency characteristics of reflection and transmission coefficient of the waves propagating in the media. (8 refs)

Main heading: Electromagnetic waves
Controlled terms: Electromagnetic dispersion - Electromagnetic field effects - Electromagnetic wave propagation - Electromagnetic wave reflection - Finite difference method - Plasmas - Time domain analysis
Uncontrolled terms: Amplitude frequency characteristics - Chromatic dispersion media - Recursive convolution method - Time domain finite difference equations
Classification Code: 711.1 Electromagnetic Waves in Different Media - 921.6 Numerical Methods - 932.3 Plasma Physics
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

48. Summary of KBMS requirements in knowledge-based application systems

Hai-feng, Dong (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 44-47, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Today, knowledge-based systems are used more and more widely. Application systems for knowledge base management system (KBMS) have varying requirements. By taking several application systems as examples, this work analyzes regular expert systems with the aim of understanding natural languages and the KBMS requirements of the forming system, visual system and design environment. (6 refs)
Main heading: Knowledge based systems
Controlled terms: Computer aided design - Computer applications - Computer graphics - Database systems - Expert systems - Natural language processing systems
Uncontrolled terms: Knowledge base management system - Visual system
Classification Code: 723.2 Data Processing and Image Processing - 723.3 Database Systems - 723.4.1 Expert Systems - 723.5 Computer Applications
Treatment: Applications (APP) - General review (GEN)
Database: Compendex
Data Provider: Engineering Village

49. Study of well drilling pump's air dynamics accumulator with the effects of crank-link rod ratio considered

Wu, Yi-jiong (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 30-34, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Fourier progression expression of flowing rate for the drilling pump with three single functional cylinders is put forward. The dynamic mechanical model of the drilling pump's air accumulator was established with the fluid inertia in the drain pipe and guide pipe and the resistance losses in the guide pipe considered. The expression of the flowing rate in the drain pipe behind the air accumulator was evaluated. The factors affecting the pulsation attenuation of flowing rate were analyzed and the basis for designing the minimum volume of the air accumulator is given out. It is held that as the air accumulator's volume with minimum pulsation is affected by the pump's working conditions and the times of harmonics, it can hardly be used as the basis for designing the air accumulator with minimum volume. The theoretical residual volume and practical residual volume were compared and they are considered to be close to each other. In the end, the paper points out that under the present working conditions of the drilling pumps, the conventional computing method of the air accumulator can be used as well. (2 refs)
Main heading: Oil well pumps
Controlled terms: Drill pipe - Flow measurement - Flow of fluids - Oil well drilling - Pulsatile flow
Uncontrolled terms: Air dynamics accumulator - Cranklink rod ratio
Classification Code: 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 618.2 Pumps - 631.1 Fluid Flow, General - 943.2 Mechanical Variables Measurements
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

50. Reservoir-geochemistry - the latest progress in petro-geochemistry

Lin, Ren-zi (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 8-14, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper systematically summaries the latest progress and main research contents in the field of reservoir geochemistry: (1) organic and inorganic reaction in reservoir pores and the prediction of pore distribution; (2) the description of reservoir geochemistry and the research of reservoir injection history; (3) the monitoring technique of geochemistry in the process of oil-field development; (4) the geochemical mechanism of oil-shale humidification in the oil-field development and its application. (14 refs)
Main heading: Petroleum reservoirs
Controlled terms: Geochemistry - Injection (oil wells) - Oil bearing formations - Oil field development - Oil shale - Organic acids - Petroleum geology
Uncontrolled terms: Oil bearing layer - Oil shale humidification - Petro geochemistry - Reservoir injection history - Reservoir pores
Classification Code: 481.1 Geology - 481.2 Geochemistry - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 804.1 Organic Compounds
Treatment: Applications (APP) - General review (GEN)
Database: Compendex
Data Provider: Engineering Village

51. Application of Grey system theory in forecasting oil production

Bonian, Sun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 54-56, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In the paper, GM(1 - 1) model was chosen to analyse practical oil production problem and thus a model was established for forecasting the oil production of oil wells, the production of which began to decrease progressively. Some application results prove that this model has the features of high accuracy, high computing speed, convenience and practicality. (3 refs)
Main heading: Oil well production
Controlled terms: Crude petroleum - Forecasting - Mathematical models - Models - System theory
Uncontrolled terms: Grey system theory - Oil production forecasting
Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 921.6 Numerical Methods
Treatment: Applications (APP) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

52. Dolomization of the 1st submember of the 5th member of Majiagou FM in Liulin Ordovician system, Shanxi Province

Wang, Baoqing (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 19-23, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The 1st submember of the 5th member of Majiagou FM in Liulin, Shanxi Province mainly consists of dolomite. Its top is limestone. It was deposited in shallow, restricted and typical intracraton epicontinental environments with high salinity. The dolomite can be classified into penecontemporaneous dolomite and diagenetic dilomite. The #13C and #18O values of dolomite range from -8.1 per mill to 0.1 per mill and from -10.9 per mill to -7.1 per mill with the mean values of -3.0 per mill and -8.9 per mill respectively, showing little difference from those of micrite. The #13C and #18O values of penecontemporaneous dolomite range from -4.9 per mill to 0.1 per mill and from -10.3 per mill to 7.1 per mill with the mean values of -2.1 per mill and -8.7 per mill respectively. The #13C and #18O values of diagenetic dolomite range from -8.1 per mill to -3.3 per mill and from -10.9 per mill to -7.7 per mill with the mean values of -5.4 per mill and -9.2 per mill respectively. The #13C values of penecontemporaneous dolomite are higher than those of diagenetic dolomite. #18O values of the two kinds of dolomite are similar. The contents of Fe2O3 for dolomite range from 0.51% to 2.99% with the mean value of 1.36%, and are higher than those of micrite. The contents of Sr for dolomite range from 13 ppm to 47 ppm with the mean value of 23 ppm. The contents of Sr for both

dolomite and micrite are low, but the contents of Sr for dolomite are little lower than those for micrite. The cell volume of dolomite has decreased about 12.7% in comparison with that of calcite. The dolomization caused volume decrease, forming intercrystalline pores which benefits the permeation and leaching of meteoric water. The permeation and leaching of meteoric water reformed the intercrystalline pores, forming intercrystalline solution pores, corrosion pores and fractures. The contents of MgCO3 for almost all dolomite samples are more than 50 mole%, indicating that the dolomization is a result of the mixing of meteoric water and seawater with high concentration of magnesium. (2 refs)
Main heading: Petroleum geology
Controlled terms: Crystalline rocks - Magnesite - Oil bearing formations - Petroleum reservoirs - Porosity
Uncontrolled terms: Diagenetic dolomite - Dolomization - Intracraton epicontinental environments - Meteoric water - Micrite - Penecontemporaneous dolomite
Classification Code: 481.1 Geology - 481.1.2 Petrology (Before 1993, use code 482) - 482.2 Minerals - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

53. Features of mudstone compaction in Yanchang FM of North Shaanxi

Liu, Yong (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 42-45, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Based on the mudstone compaction curves of exploratory wells, a comprehensive study was made on the features of mudstone compaction in Yanchang FM of North Shaanxi slope of Shaanxi-Gansu-Ningxia Basin. The results show that the normal compaction trend is clear and consistent and the under-compaction generally developed in the YC4+5 oil-bearing and YC6 oil bearing FM. The minimum sonic value which keeps equilibrium between the compaction and water drainage is 225 μm/s and the denudation of the overburden amounts to 1800 to approximately 2500 m. The under-compaction of the mudstone is one of the main motive power of oil and gas migration in this region. (4 refs)
Main heading: Petroleum reservoirs
Controlled terms: Compaction - Crude petroleum - Erosion - Exploratory oil well drilling - Sedimentary rocks
Uncontrolled terms: Gas migration - Minimum sonic value - Mudstone compaction - Oil motive power - Shanxi-Gansu-Ningxia basin
Classification Code: 482.2 Minerals - 483 Soil Mechanics and Foundations - 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

54. Progress made in enzyme-labelled voltammetric immunoassay

Zheng, Li (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 42-45, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: By quoting information from 22 literatures and based on the classification of labelled enzyme, the paper reviewed in detail the progress made in enzyme-labelled voltammetric immunoassay. Its basic principles, required conditions, different workable ways, detecting techniques, present studying state and probable applications are expounded. (22 refs)
Main heading: Bioassay
Controlled terms: Catalysis - Enzymes - Microanalysis
Uncontrolled terms: Immunoassay - Labelled enzymes - Voltammetry
Classification Code: 461.2 Biological Materials and Tissue Engineering - 461.6 Medicine and Pharmacology - 801 Chemistry - 801.2 Biochemistry - 802.2 Chemical Reactions - 804.1 Organic Compounds
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

55. Gas generator passing through the oil pipe used for high energy gas fracturing

Wu, Jin-jun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 28-30, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper designed a gas generator used for HEGF. Its feature is that it passes through the oil pipe. In the process of HEGF, the oil pipes needn't be raised out of the hole. Its effect is the same as normal generators. The oil-gas output will be increased and the cost will be reduced. By calculating its strength and testing the ignition system in the static state, it is believed that the structure of this gas generator is reasonable and its ignition performance is reliable. It can be directly used in the oil fields. It provides a new, simple and effective way of applying HEGF technology to the oil fields. (3 refs)
Main heading: Gas generators
Controlled terms: Combustion - Crude petroleum - Fracturing (oil wells) - Natural gas - Pipe - Structural design
Uncontrolled terms: High energy gas fracturing - Static ignition
Classification Code: 511.1 Oil Field Production Operations - 521.1 Fuel Combustion - 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

56. Unconventional stimulation technologies - state of the art and considerations for further development

Xue, Zhong-tian (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 15-18, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Unconventional stimulation technologies which are the important part of oil/gas production technologies are of great significance to maintaining the national total oil and gas output. This paper outlines the current state of 8 relevant technologies including high energy gas fracturing, hydraulic oscillation, sonic and ultrasonic wave, artificial earthquake, electric shocking, wellbore deep penetration, formation loosening by explosion and chemical combustion. The paper also puts forward some suggestions for developing the domestic unconventional stimulation technologies. (3 refs)
Main heading: Well stimulation
Controlled terms: Boreholes - Combustion - Fracturing (oil wells) - Oil bearing formations - Oil well production - Oscillations - Productivity - Technology - Ultrasonic waves
Uncontrolled terms: Artificial earthquake - Electric shocking - Formation loosening - Hydraulic oscillation - Stimulation technology - Wellbore deep penetration
Classification Code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 753.1 Ultrasonic Waves
Treatment: Applications (APP) - General review (GEN)
Database: Compendex
Data Provider: Engineering Village

57. Tectonic evolution and hydrocarbon distribution of Dawa-Changtu depression

Sun, Dongsheng (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 46-49, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Dawa-Changtu depression is a subsidiary and negative tectonic unit in Tieling-Changtu Basin, which is an early faulted and late depressed sag developed from late Jurassic to early Cretaceous period on Vatiscan geosycline fold belt. According to the tectonic and sedimentary characteristics and also the tectonic characteristics in Mesozoic era of East China, its evolution process can be divided into four stages, i.e. pregnancy, faulting, depressing and shrivelling stages. Dynamic mechanism of depression evolution was studied by using the theory of plate tectonic. Favourable exploiting section was demonstrated after considering the tectonic control over the source-reservoir cap. (4 refs)

Main heading: Petroleum reservoirs
Controlled terms: Petroleum geology - Rock mechanics - Sedimentology - Tectonics
Uncontrolled terms: Cretaceous period - Dawa-Changtu depression - Jurassic period - Mesozoic era - Source reservoir cap
Classification Code: 481.1 Geology - 483.1 Soils and Soil Mechanics - 512.1 Petroleum Deposits - 512.1.1 Oil Fields
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

58. High order finite forward modeling for vsp of acoustic wave equation

Li, Ruijian (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 38-41, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The finite difference method was used to solve the acoustic waves equation. By properly using the absorbing boundary, free boundary and the seismic source, the physical procedure of acoustic waves propagating in semi-infinite inhomogeneous media was simulated. Various kinds of acoustic ways such as reflection, multiply, diffracted waves can be clearly seen in the vsp profile obtained by the method. The method provided in this paper can be used to compute the seismic models which are as complicated as they could be. Instead of using common second-order finite difference algorithm, the paper adopted the fourth-order difference algorithm to solve the acoustic wave equation and resulted in difference solution of high accuracy. The computing examples of different kinds of structure models show that the method in this paper can be put into practical use. (1 refs)
Main heading: Seismic prospecting
Controlled terms: Acoustic wave diffraction - Acoustic wave reflection - Acoustic wave transmission - Algorithms - Finite difference method - Mathematical models
Uncontrolled terms: Acoustic wave equation - High order finite difference algorithms - Seismic models - Vertical seismic profiling
Classification Code: 481.4 Geophysical Prospecting - 484.1 Earthquake Measurements and Analysis - 751.1 Acoustic Waves - 921 Mathematics - 921.6 Numerical Methods
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

59. Optimum distribution of reactive power compensation in the power distribution system

Jiang, Yan-zhi (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 45-49, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In the reactive compensation of power distribution system, when in situ decentralisation compensation is adopted, the maximum net year profit may be regarded as the objective function for optimum distribution. But in concentritic reactive compensation, the distribution of reactive power compensation must obey the rule of differential increment rate for equal power loss with the output power factor guaranteed as a prerequisite. This paper presents the principles and a computer algorithm of reactive compensation distribution based on the accurate mathematical model of power distribution system. (3 refs)
Main heading: Electric power distribution
Controlled terms: Algorithms - Computer applications - Electric losses - Electric power systems - Mathematical models - Networks (circuits)
Uncontrolled terms: Compensating device - In situ decentralization compensation - Reactive power compensation
Classification Code: 703.1 Electric Networks - 706.1 Electric Power Systems - 706.1.2 Electric Power Distribution - 723 Computer Software, Data Handling and Applications - 723.5 Computer Applications - 921 Mathematics
Treatment: Applications (APP) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

60. Study and application of multi-purpose separately assembled striking ignitor

Wu, Jin-jun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 23-25, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The multi-purpose striking ignitor studied in this paper can be used to realize the aims of high energy gas fracturing (HEGF), acid treatment and hydrodynamic fracturing, etc. i.e. after HEGF, acid treatment or hydrodynamic fracturing, etc. can be carried out without hoisting out the oil pipes, which has greatly simplified the synthetical processing technologies of the oil bearing layers, lowered the construction cost and raised the fracturing effects. The reliability and safety of the striking and igniting device are analyzed in the paper. Its applications in the oil fields are analyzed and discussed. The practices prove that the structure is reasonable, convenient and safe. It is worth spreading. (2 refs)
Main heading: Fracturing (oil wells)
Controlled terms: Accident prevention - Acidization - Cost effectiveness - Oil field equipment - Reliability
Uncontrolled terms: High energy gas fracturing - Hydrodynamic fracturing - Oil bearing layers - Shearing pin
Classification Code: 511.1 Oil Field Production Operations - 511.2 Oil Field Equipment - 802.2 Chemical Reactions - 911.2 Industrial Economics - 913.3 Quality Assurance and Control - 914.1 Accidents and Accident Prevention
Treatment: Applications (APP) - General review (GEN)
Database: Compendex
Data Provider: Engineering Village

61. Finite element analysis of vibration collision characteristics of drill stem with the sidewall

Zhang, Guang-wei (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 20-22, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The lateral vibration equation of collision between the drill stem and the sidewall was derived with the effects of drilling fluid outside the drill stem considered. A computation model for analyzing the characteristics of vibration and collision by finite element method is presented. The collision force is described by nonlinear spring and nonlinear damper. The calculated results show that the clearance between the drill stem and the sidewall affects the frequency response of the drill stem and the impact. The result of the research may be used as a reference for avoiding skew wear of the drill stem and predicting its service life. (2 refs)
Main heading: Oil well drilling equipment
Controlled terms: Drilling fluids - Finite element method - Frequency response - Mathematical models - Vibrations (mechanical)
Uncontrolled terms: Drill stem - Lateral vibrations - Sidewall collision
Classification Code: 511.2 Oil Field Equipment - 731.1 Control Systems - 803 Chemical Agents and Basic Industrial Chemicals - 921 Mathematics - 921.6 Numerical Methods - 931.1 Mechanics
Treatment: Applications (APP) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

62. Tectonic characteristics and oil-gas bearing prospects of the west Inner Mongolia basin

Bai, Yubao (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 15-18, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The western basin in Inner Mongolia is one developed on the pre-Mesozoic basement. It was divided into six depressions by two doming up zones. In the basin there are two sets of oil-generating strata of Cretaceous-Jurassic system. Together with the reservoir and cover, they probably constituted various types of oil and gas accumulation. There will be certain breakthrough in the exploration if the exploiting work in the basin is speeded up. (5 refs)
Main heading: Petroleum geology
Controlled terms: Oil bearing formations - Petroleum prospecting - Petroleum reservoirs - Stratigraphy - Tectonics
Uncontrolled terms: Cretaceous generating strata - Gas accumulation - Jurassic strata - PreMesozoic basements
Classification Code: 481.1 Geology - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations

Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

63. Effects of environmental factors on the measurements of logging while drilling

Shi, Jianhua (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 31-34, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Logging while drilling (LWD) is a relatively new technology. Analysing and discussing the effects of environmental parameters on its measurements is good for its further application and spreading. Effects of environmental parameters include borehole size, drilling rate, invasion depth and formation exposure time, etc. Analysis and comparison of LWD measurements with natural gamma ray, neutron porosity and resistivity logging measurements show that in many cases LWD can provide more accurate data than cable sensors and can improve the final interpretation. (10 refs)
Main heading: Well logging
Controlled terms: Boreholes - Drilling - Electric logging - Environmental impact - Gamma rays - Neutron logging - Neutrons - Porosity - Sensors
Uncontrolled terms: Gamma ray logging - Logging while drilling - Natural gamma ray
Classification Code: 512.1.1 Oil Fields - 512.2.2 Natural Gas Deposits: Development Operations - 931.2 Physical Properties of Gases, Liquids and Solids - 932.1 High Energy Physics
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

64. Design of the vacuum test equipment for determining the oil pump clearance

Zhang, Guang-tai (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 26-28, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The author designed a vacuum test equipment for inspecting the oil pump. The paper introduces the design principle, i.e. the leakage of the oil pump is determined by using vacuum method and the pump clearance is calculated by relevant formulas. In this way the defects of conventional test equipment, such as low test efficiency and precision and environmental pollution can be overcome. The paper presents the overall design of the equipment and also the design of the vacuum system. (4 refs)
Main heading: Oil well pumps
Controlled terms: Design - Equipment testing - Mathematical models - Mechanical variables measurement - Test facilities - Vacuum technology
Uncontrolled terms: Oil pump clearance - Vacuum system - Vacuum test equipment
Classification Code: 511.2 Oil Field Equipment - 618.2 Pumps - 633 Vacuum Technology - 921.6 Numerical Methods - 943.2 Mechanical Variables Measurements
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

65. Protecting system of electric Rig's electric generator

Li, Yu-liang (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 42-44, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper analyses the protecting system of the electric generator installed in the electric rig. The system includes voltage, over voltage, under voltage, over frequency, under frequency, reverse power, phase sequence etc. Each system is detected by a mixed circuit of integrated components and separate components. When one or more of the above mentioned units work in abnormal condition, there will produce signals of protection to make the electric generator's chopper operate, giving an alarm light or even turn off the diesel engine. Some protecting circuits

output regulating signals to adjust the driving system automatically to make it operate normally. When the adjustment becomes invalid, the power will be cut off to stop the machine. (3 refs)
Main heading: Electric generators
Controlled terms: Alarm systems - Diesel engines - Drilling rigs - Electric equipment protection
Uncontrolled terms: Alarm device - Electric rig
Classification Code: 511.2 Oil Field Equipment - 612.2 Diesel Engines - 704.1 Electric Components - 705.2 Electric Generators - 914.1 Accidents and Accident Prevention
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

66. Determination of herpes simplex virus antibody (HSV-Ab) by ELISA-LSP and its application in the selection of anti-HSV monoclonal antibodies

Zheng, Li (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 54-56, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: It's reported that hexpes simplex virus-antibody (HSV-Ab) was determined by ELISA-LSP which used HRP as labelling enzyme. The optimum conditions for the determination were studied. Under optimum conditions, the linear range of HSV-Ab by ELISA-LSP was determined as 1:25 to 1:1600 with r = 0.9814, which was higher than 1:50 to 1:800 with r = 0.9761 by ELISA. The determination limit of ELISA-LSP (1:3200) was two times lower than that of ELISA (1:1600). The selection of anti-HSV monoclonal antibodies out of 40 systems of hybrid tumor cells was made. The positive clonal ratio was 75% by ELISA-LSP, which was higher than that by ELISA. The results of type identification of positive clonals by the above two methods are in good agreement. (2 refs)
Main heading: Trace analysis
Controlled terms: Electrochemistry - Monoclonal antibodies - Oncogenic viruses - Polarographic analysis
Uncontrolled terms: Herpes simplex virus antibody - Positive clonals identification
Classification Code: 461.2 Biological Materials and Tissue Engineering - 461.9.1 Immunology - 801 Chemistry - 801.2 Biochemistry - 801.4.1 Electrochemistry
Treatment: General review (GEN) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

67. Study of micro-heterogeneity for the main layers of Zibei Oil Field

Lei, Tiancheng (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 50-53, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Taking the research of porosity and permeability as the primary line, the paper used mathematical and statistical methods to study the location characteristic parameters, discrete characteristic parameters, plane micro-heterogeneity and vertical micro-heterogeneity of the main oil layers of Zibei Oil Field . The reason of forming micro-heterogeneity was analyzed. It is believed that the micro-heterogeneity is very serious in this region. The main reason to cause micro-heterogeneity is lithologic character and diagenesis in the later period. (3 refs)
Main heading: Petroleum geology
Controlled terms: Anisotropy - Crystal microstructure - Lithology - Mechanical permeability - Numerical methods - Oil fields - Porosity - Statistical methods
Uncontrolled terms: Diagenesis - Microheterogeneity - Zibei oil field
Classification Code: 481.1 Geology - 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 921.6 Numerical Methods - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

68. Emulation of energy-saving oil source of electro-hydraulic servo simulation system for well pumping unit

Wei, Wu (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 36-39, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In order to realize high efficiency of electro-hydraulic servo simulation system and for energy saving, this paper presents an energy saving oil source of compensating oil-unloading. The composition and working mechanism of the oil source are analysed. By analysing the different working conditions of the oil source, the working conditions for realizing oil compensation-unloading and the relevant data table for calculating the critical flow Qp of oil compensation-unloading were acquired. The pressure characteristic curves of oil source in oil compensation and unloading working condition were calculated and emulated. Practical emulation results show the energy saving efficiency of the oil source can reach 22.5%. (4 refs)
Main heading: Oil well pumping
Controlled terms: Calculations - Energy conservation - Energy efficiency - Servomechanisms - Simulation - Well pressure
Uncontrolled terms: Electrohydraulic servo simulation system - Emulation - Energy saving oil source - Oil compensation - Oil unloading - Well pumping unit
Classification Code: 511.1 Oil Field Production Operations - 525.2 Energy Conservation - 705 Electric Generators and Motors - 732.1 Control Equipment - 921.6 Numerical Methods
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

69. Synthetical judgement of the use of bits by statistical method

Chen, Jun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 26-29, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper comprehensively analyses the results and conditions of bit utilization as one system with statistical analysis of main components. By way of orthogonal transformation of bit sample matrix to seek the main component, which can be used to synthesize the bit information to the utmost, a model of comprehensive bit judgement was established. It helps to realize quantitative judgement of bit utilization. This method has been successively applied in the middle-north area of Changging Oil & Gas Field with low permeability. The results are proved to be identical with the actual situation in the drilling site. (6 refs)
Main heading: Oil well drilling equipment
Controlled terms: Bits - Low permeability reservoirs - Mathematical models - Mathematical transformations - Offshore drilling - Statistical methods
Uncontrolled terms: Bit utilization - Comprehensive judgement - Orthogonal transformations
Classification Code: 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 603.2 Machine Tool Accessories - 921 Mathematics - 921.3 Mathematical Transformations - 922.2 Mathematical Statistics
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

70. Bus specifications of one-chip processor SL51 and their fast application system

Lin, Li (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 42-43, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In the course of developing and designing one-chip processors, in order to reduce the repetitive design and raise the reliability of the systems, the author proposed bus design specifications which are adapted for one-chip processor of 51 series and designed module circuit boards according to the functions, so that the boards can form a system in line with the bus specifications. The author developed a fast application system and it has been applied in practical research projects. (2 refs)
Main heading: Microprocessor chips

Controlled terms: Electronics packaging - Integrated circuit layout - Printed circuit boards - Reliability - Specifications
Uncontrolled terms: Bus specifications - One chip processor - Single board compute
Classification Code: 714.2 Semiconductor Devices and Integrated Circuits - 721.3 Computer Circuits
Treatment: Applications (APP) - General review (GEN)
Database: Compendex
Data Provider: Engineering Village

71. New intelligent computer system for horizontal wells gravel-packing

Pu, Chunsheng (1)
Source: *Proceedings - SPE International on Horizontal Well Technology*, p 651-658, 1996, *Profit Through Synergy*; **Conference:** Proceedings of the 1996 2nd International Conference on Horizontal Well Technology, November 18, 1996 - November 20, 1996; **Publisher:** Society of Petroleum Engineers (SPE)
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: A new mathematical and intelligent computer system for the optimal design of horizontal wells gravel-packing was developed. The mathematical models in this computer system were established by the use of non-Newtonian fluid flow and fluid-solid two phase equilibrium characteristics in the tailpipe-screen annulus and the open channel above an equilibrium bank of the horizontal well. A new propagation algorithm based on Grey and fuzzy theory was used to construct the inference engine of the computer system to give the sanding potentials assessment of a poorly lithified or uncemented sandstone formation. This computer system can be used to predict the flow velocity of the carrying fluid, the pressure distribution of the flow field, the concentration distribution of the gravel sand and the packing efficiency. So, this system can be easily used for the optimal design of horizontal wells gravel-packing. A practical application example was introduced and rather satisfactory results were obtained. (8 refs)
Main heading: Horizontal wells
Controlled terms: Algorithms - Computer systems - Inference engines - Mathematical models - Non Newtonian flow - Oil bearing formations - Phase equilibria - Two phase flow - Well pressure
Uncontrolled terms: Horizontal well gravel packing
Classification Code: 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 723 Computer Software, Data Handling and Applications - 801.4 Physical Chemistry - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

72. Study on demulsifiers modified by acrylic acid

Xu, Jia-ye (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 36-38, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Synthesis, identification and demulsification properties of the demulsifiers modified by acrylic acid were studied. It is shown that the dewatering ability of some modified demulsifiers is better than the original. (4 refs)
Main heading: Demulsification
Controlled terms: Agents - Chemical modification - Dewatering - Organic acids - Synthesis (chemical)
Uncontrolled terms: Acrylic acid - Demulsifiers
Classification Code: 802.2 Chemical Reactions - 802.3 Chemical Operations - 803 Chemical Agents and Basic Industrial Chemicals - 804.1 Organic Compounds
Treatment: General review (GEN) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

73. Reservoir characteristics of the third member of Shahejie formation in Nanmazhuang Oil Field

Zhang, Jinliang (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 8-14, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The production layers of Nanmazhuang Oil Field is in the third member of Shahejie formation. The depositional sequence, lithologic data and sandstone distribution patterns indicate that the sandstone was deposited by wave-dominated deltas and lakeside beaches and bars. The main authigenic minerals include carbonate kaoninite, illite, miscible layer of illite-montmorillonite and chlorite. Most of the porosity is secondary intergranular space. The reservoir quality is generally good, but obvious heterogeneities exist in and between the layers and on the surface. Hydrocarbon distribution is controlled by lithology and geologic structure. (5 refs)
Main heading: Petroleum reservoirs
Controlled terms: Beaches - Geomorphology - Lithology - Oil bearing formations - Oil fields - Petroleum geology - Sandstone - Stratigraphy
Uncontrolled terms: Authigenic minerals - Hydrocarbon distribution - Nanmazhuang oil field - Shahejie formation
Classification Code: 407.3 Coastal Engineering - 481.1 Geology - 482.2 Minerals - 511 Oil Field Equipment and Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

74. Analytical analysis of casing friction in horizontal wells

Wang, Jian-jun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 17-19, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The casing friction in horizontal wells was investigated theoretically. In establishing the mechanic model, the friction in tripping process was taken into consideration. The differential equations of casing friction were established and their analytical solutions were obtained. The solutions can be conveniently used to estimate the casing friction in the tripping process. As an example, the casing friction of a horizontal well-Saiping-1 was calculated by using the formulas given in this paper. It is shown that the calculated results are in fairly good agreement with the measured values. (5 refs)
Main heading: Horizontal wells
Controlled terms: Differential equations - Directional drilling - Friction - Mathematical models - Numerical analysis - Oil well casings
Uncontrolled terms: Directional well - Tripping process
Classification Code: 511.2 Oil Field Equipment - 512.1.1 Oil Fields - 921 Mathematics - 921.2 Calculus - 921.6 Numerical Methods - 931.1 Mechanics
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

75. Three phase electronic watt-hour meter of complex charges with microcomputer 8098 being the key component

Yu, Min (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 29-31, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper introduces an electric meter of complex charges, the key unit of which is a 8098 single board computer. Its design principles, theoretical computing formulas, structure diagram and software design are introduced. Several groups of tested linearity curves are chosen to show the performance testing results of the meter.
Main heading: Watt hour meters
Controlled terms: Computer software - Electromagnetic fields - Microcomputers
Uncontrolled terms: Three phase alternating current
Classification Code: 701 Electricity and Magnetism - 722.4 Digital Computers and Systems - 723 Computer Software, Data Handling and Applications - 942.1 Electric and Electronic Instruments
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

76. Negative flower-pattern structure and its significance to oil-gas reservoir in Nanmazhuang Oil Field

Hou, Yangshan (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 24-27, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Proceeding from the accurate interpretation of seismic profile and analyzing by combining with the region stress field, the paper points out that there exists negative flower-pattern structure at Nanmazhuang fault. An analysis of relation was made between such structure and the oil-gas reservoir. The paper further demonstrates the relationship between the fault development, the distribution of remaining oil and the adjustment of injection-production wells. (2 refs)
Main heading: Petroleum reservoirs
Controlled terms: Oil fields - Petroleum geology - Seismic prospecting - Stress concentration - Tectonics
Uncontrolled terms: Nanmazhuang fault - Negative flower pattern structure
Classification Code: 422 Strength of Building Materials; Test Equipment and Methods - 481.4 Geophysical Prospecting - 484.1 Earthquake Measurements and Analysis - 511 Oil Field Equipment and Production Operations - 512.1 Petroleum Deposits - 512.1.1 Oil Fields
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

77. Improving the results of numerical simulation of reservoir by using stochastic simulation

Zhang, Tuan-feng (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 52-54, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The development and applications of stochastic simulation of reservoir are summarized in this paper. Applications of the combination of stochastic simulation with numeric simulation in improving the numerical simulation results of reservoir are emphasized, which are as follows: the study of shale spatial distribution, the study of reservoir heterogeneity based on single well test data, description of the spatial variation of permeability and calculation of effective permeability, the study of water production time by using stochastic modelling of more stages. It's of great importance to adopt stochastic simulation technique in advance to simulate the reservoir numerically for studying and mastering the performances of developing the heterogeneous reservoir by water injection. (4 refs)
Main heading: Petroleum reservoir evaluation
Controlled terms: Calculations - Computer simulation - Mathematical models - Mechanical permeability - Random processes - Shale - Water - Water injection
Uncontrolled terms: Reservoir heterogeneity - Spatial distribution - Stochastic simulation
Classification Code: 482.2 Minerals - 512.1.1 Oil Fields - 723.5 Computer Applications - 921 Mathematics - 922.1 Probability Theory
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

78. Distribution of free radicals in colloid and its orientation in micelles

Wang, Yu-kun (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 3, p 35-37, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: A series of tailed 2,2,6,6-tetramethyl-piperdine-1-oxygen nitroxide free radicals with different chain hydrocarbon groups were synthesized. Their electron selfspinning resonance (ESR) spectrum was determined. The effects of 4-substituent and the polarity of solvent on ESR spectrum were studied. The orientation effects of these tailed piperdine nitroxide molecules free radicals in the micelles of colloid solvent where surfactants formed were investigated. (9 refs)
Main heading: Free radicals

Controlled terms: Colloids - Electron spin resonance spectroscopy - Hydrocarbons - Micelles - Molecules - Oxides - Paramagnetic resonance - Surface active agents - Synthesis (chemical)
Uncontrolled terms: Electron self spinning resonance - Tetramethyl piperdine oxygen nitroxide
Classification Code: 701.2 Magnetism: Basic Concepts and Phenomena - 801.3 Colloid Chemistry - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 804.1 Organic Compounds - 804.2 Inorganic Compounds
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

79. Research of rotary shaft seals on filling pump

Zeng, Guang-xi (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 1, p 29-32, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: On the basis of experiments in sealing mud of high stickness, density and large quantity of sand on the rotary shaft of filling pump, the author et al designed a combination type system. It includes sealing with back leaves, anti-pressure stuffing structure, soft graphite stuff and sealing with carbon fibre rings at both ends of the stuff. This system makes the sealing of rotary shaft on filling pump have the features of high quality, lower power consumption and longer life. It has been applied in the oil fields and desirable effects have been obtained. (2 refs)
Main heading: Seals
Controlled terms: Carbon fibers - Graphite - Oil sands - Oil well pumps - Sealants - Sealing (closing) - Shafts (machine components)
Uncontrolled terms: Anti pressure stuffing structure - Filling pump - Rotary shaft seals
Classification Code: 511.2 Oil Field Equipment - 601.2 Machine Components - 619.1.1 Pipe Accessories - 804 Chemical Products Generally
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

80. Study of microscopic oil displacement efficiency of Leng-43 gravel reservoir of Viscous crude oil, Liaohe oil field

Yongli, Gao (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 35-36, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: Six simulated micro-models of the formation were made by using the core casting slices of Well Leng 43 - 54 - 566. The water driving mechanism in the gravel viscous oil reservoir was directly observed by taking the physical simulation techniques of micro-visualization, image analysis technique and by using the microscope and videorecorder. The influence of crude oil's viscosity and the formation porosity on the mechanism and efficiency of oil displacement was analysed. The paper also analysed the distribution features of residual oil and presents corresponding conclusions.
Main heading: Petroleum reservoirs
Controlled terms: Computer simulation - Crude petroleum - Efficiency - Image analysis - Mathematical models - Microscopes - Oil bearing formations - Porosity - Viscosity - Viscous flow - Visualization
Uncontrolled terms: Core casting slices - Liaohe oil fields - Micro visualization - Microscopic oil displacement efficiency - Viscous crude oil - Water driving mechanism
Classification Code: 512.1 Petroleum Deposits - 512.1.1 Oil Fields - 723.5 Computer Applications - 741.3 Optical Devices and Systems - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

81. Relationship between oil-gas distribution and subsurface fluid pressure

Jin, Xiaohui (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 2, p 30-34, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The controlling factors of subsurface fluid pressure for different flow patterns are demonstrated by analyzing several popular flow patterns at present. It is pointed out that the magnitude of the excessive pressure and fluid potential controls the direction of oil-gas migration, and also the region of oil-gas migration. Pressure of fluid potential evolution history affects the process of oil-gas migration, accumulation and demolition. The present pressure distribution also affects the operation of drilling engineering and also the making of reasonable development scheme. The study on fluid pressure distribution and evolution laws will help to deepen the understanding of the forming of oil-gas reservoir. (6 refs)
Main heading: Petroleum reservoirs
Controlled terms: Flow patterns - Hydrostatic pressure - Mathematical models - Oil well drilling - Petroleum reservoir engineering - Pressure effects
Uncontrolled terms: Fluid potentials - Subsurface fluid pressure
Classification Code: 512.1.1 Oil Fields - 512.1.2 Petroleum Deposits : Development Operations - 631.1 Fluid Flow, General - 631.1.1 Liquid Dynamics - 921 Mathematics
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

82. On point hypothesis test on nonparametric regression curves

Zhang, Tuan-feng (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 6, p 50-53, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: In this paper, a test for point hypothesis of regression curves is discussed by making use of the kernel estimation of non-parametric regression function. The consistency result of any K-order regression curves is given under general conditions first, then an asymptotic rejection domain for point hypothesis of a nonparametric regression curves based on a level is given. (4 refs)
Main heading: Regression analysis
Controlled terms: Curve fitting - Mathematical models - Statistical methods
Uncontrolled terms: Asymptotic rejection domain - Kernel estimation - Nonparametric regression curves
Classification Code: 921 Mathematics - 921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory - 921.6 Numerical Methods - 922.2 Mathematical Statistics
Treatment: General review (GEN) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

83. Discussion on the physical phenomena and weld forming mechanism in the process of copper-stainless steel friction welding

Shi, Kai (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 5, p 39-43, 1996; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The physical phenomena of copper and stainless steel in the process of friction welding joint forming were recorded and observed by the method of interrupting the test. The test shows that the butt friction welding process of copper and stainless steel bar can be divided into the following stages approximately: the adhesion at the beginning of friction, friction inside the copper, the expansion of the plastic ring and the friction on the bound surface of copper-stainless steel and the friction in stainless steel. During the process, the friction surface was transformed twice. The research results will be useful to the study of weld forming mechanism of dissimilar material friction welding. (4 refs)
Main heading: Welds
Controlled terms: Butt welding - Copper - Dissimilar metals - Friction welding - Stainless steel
Uncontrolled terms: Butt friction welding process
Classification Code: 531 Metallurgy and Metallography - 538.2 Welding - 538.2.1 Welding Processes - 544.1 Copper - 545.3 Steel

Treatment: General review (GEN) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

84. Room experiments of the effects of crude oil viscosity, valve diameter and pumping speed on pump efficiency of sucker rod pumping system

Guoan, Yu (1)
Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 11, n 4, p 51-53, 1996; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute
Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China
Abstract: The paper studied by experiments the effects of crude oil viscosity, valve diameter and pumping speed on the pump efficiency of the sucker rod pumping system. In the experiments, glycerine was mixed with water to simulate various oil products of different viscosity. The experiment device was designed and made by the authors. Useful results have been obtained. Some suggestions concerning pumping parameters are put forward in the paper.
Main heading: Oil well pumping
Controlled terms: Crude petroleum - Efficiency - Glycerol - Speed - Valves (mechanical) - Viscosity - Water
Uncontrolled terms: Crude oil viscosity - Pump efficiency - Pumping speed - Sucker rod pumping efficiency - Value diameter
Classification Code: 511.1 Oil Field Production Operations - 512.1 Petroleum Deposits - 732.1 Control Equipment - 804.1 Organic Compounds - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

85. Development of a fiber optical torquemeter

Wang, Xiwen (1); Chen, Yaosheng (2)
Source: *Proceedings of SPIE - The International Society for Optical Engineering*, v 2911, p 96-102, 1996, *Advanced Sensor and Control-System Interface*; **ISSN:** 0277786X; **DOI:** 10.1117/12.262503; **Conference:** Advanced Sensor and Control-System Interface, November 21, 1996 - November 21, 1996; **Publisher:** SPIE
Author affiliation: (1) Xi'an Petroleum Institute, Mech. Eng. Dept., Xi'an 710065, China (2) Xi'an Institute of Optical Precision Mechanics, Academia Sinica, Xi'an 710068, China
Abstract: In the paper, a fibre optical torquemeter which is suitable for on-line monitoring the turning moment of a drill turntable is researched. The meter consists of a fibre optical Mach-Zehnder Interferometer, a signal processor and a monitor. The fibre optical Mach-Zehnder Interferometer is formed with a signal and a reference optical fibre arms, two 3dB couplers, a GaAs LD and two photoelectric probers. Both the signal optical fibre arm and reference optical fibre arm are made with polarization maintaining optical fibres. The signal optical fibre arm is made with a shearing elastic tube-shaped object, and a polarization maintaining optical fibre is wound upon it. Both ends of the shearing elastic tube-shaped object is fixed upon an axis being measured. The shearing strain of the axis will make the size of the signal optical fibre change, and in this way the phase of the light wave in the optical fibre is modulated between the signal optical fibre arm and the reference optical fibre arm. By measuring the phase change with probers, the shearing strain of the axis is known, and the turning moment is obtained. The signal is processed by MCS-5 1 . The result is shown by the monitor. ©2005 Copyright SPIE - The International Society for Optical Engineering. (5 refs)
Main heading: III-V semiconductors
Controlled terms: Torque - Polarization - Mach-Zehnder interferometers - Polarization-maintaining fiber - Gallium arsenide - Signal processing
Uncontrolled terms: Elastic tubes - Fiber-optical - Online monitoring - Phase Change - Polarization maintaining optical fibre - Shearing strain - Signal processor - Turning moment
Classification Code: 712.1 Semiconducting Materials - 716.1 Information Theory and Signal Processing - 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids - 941.3 Optical Instruments
Database: Compendex
Data Provider: Engineering Village

86. Escaping from strange sets in discontinuous circle map

Wang, Bing-Hong (1); He, Da-Ren (2); Ji, Xi-Ping (2); Guan, Shan (2); Sun, Jian-Gang (3); Qu, Shi-Xian (3)
Source: *Chinese Physics Letters*, v 13, n 4, p 249-252, 1996; **ISSN:** 0256307X; **DOI:** 10.1088/0256-307X/13/4/003;
Publisher: IOP Publishing Ltd
Author affiliation: (1) Department of Modern Physics, University of Science and Technology of China, Hefei 230026 (2) Department of Physics, Northwestern University, Xi'an 710069 (3) Department of Basic Courses, Xi'An Petroleum Institute, Xi'an 710061
Abstract: The leakage of iterations from chaotic attractor near crisis due to dynamical interaction between discontinuity and noninvertibility has been studied. The scaling law of the mean life time is derived analytically. The numerical result shows very good agreement. ©by the Chinese Physical Society. (5 refs)
Uncontrolled terms: Chaotic attractors - Circle map - Dynamical interactions - Life-times - Numerical results
Database: Compendex
Data Provider: Engineering Village