Underground mining

Demin V.F., Baymul’din M.M., Demina T.V. ASSESSMENT OF THE TECHNOLOGICAL SCHEME OF DEVELOPMENT OF MINING WORKS IN THE PRACTICE OF WORKING OFF OF COAL LAYERS ................................. 5

The analysis of the field of application of rock bolting and anchorage excavation workings of the layers.
Key words: analytical modeling, stress-strain state, the technology, the outline array of rocks, the fastening of mining developments.

Dolzhikov P.N., Shubin A.A. ANALYSIS OF BACKFILLING MODELING RESULTS ........................................................................................................ 16

Process of modelling of liquidation of underground emptiness at formation of a zone of a bookmark by forcing of a hydromix on the basis of pseudo-plastic materials is considered
Key words: underground camera, oil well backfill mixture, viscous plastic materials, slurry.


The results of replacing cement by milled stale industrial waste are presented. It is substantiated the application of superplasticizer and shows its impact on the mobility of cementless composite materials.
Key words: cementless hardening backfill mixture, enrichment waste of ferruginous quartzite, sour granulated blast-furnace slag, superplasticizer.

Krnitsin R.V., Hudjakov S.V. SPECIFIC FEATURES OF PEELING BLOCK No.2 STRIPPING IN MAGNEZITOVAYA MINE (SATKA, THE CHELYBINSK REGION) ........................................................................................................... 23

The alternatives of No.2 peeling block stripping depending on rock mass tectonics changes are viewed. In the arisen situation it is advisable to apply stable band pillars with various chambers spans.
Key words: stressed state, mining pressure, sliding mirror.

Stradantchenko S.G., Maslennikov S.A., Shinkar’ D.I. CURRENT CONDITIONS AND PROSPECTS FOR DEVELOPMENT OF LINING METHODS FOR VERTICAL SHAFTS IN DIFFICULT HYDRO-GEOLICAL CONDITIONS ...... 27

In this article, the challenge for the lining of vertical shafts under construction in difficult conditions is considered. Based on the analysis of foreign experiences, the possibility and necessity of introducing steel-concrete lining is shown.
Key words: vertical shaft, cast iron-concrete lining, steel-concrete lining, shaft lining.

Open-cast

Kosolapov A.I., Malofeev D.E., Kuznetsov D.V. TO A QUESTION OF AN ASSESSMENT OF INTENSITY OF MINING WORKS WHEN DEVELOPING FIELDS IN SEVERE CLIMATIC CONDITIONS ..................................................... 35

Results of an assessment of influence of complexes of the mining and transport equipment on intensity of open mining works in the conditions of the North are given.
Key words: technological complexes of the mining and transport equipment, intensity of mining works, the maximum annual fall in a working zone.

Radomskiy S.M., Radomskaya V.I. MINERAL FORMATION OF NOBLE METALS ON POKROVSKII THE GOLD-ORE LAYER OF THE AMUR REGION .................................................................................................................. 42
Are investigated the conditions of formation and finding the minerals of noble metals on Pokrovskiy the gold-ore layer of the Upper Amur Region, the influences of the physical chemistry conditions of the containing medium on the processes of ore formation was shown.

Key words: ore formation, minerals, composition, physical chemistry processes, noble metals, Amur Region.

Fomin S.I., Marinin M.A., Ponomarev A.I. COMPLEX STRUCTURAL DEPOSITS OPEN CAST MINING TECHNOLOGICAL SYSTEM RELIABILITY EVALUATION

The balancing stripping ratio and ore production methods include simulation in order to reduce the prestripping waste and maintain a suitable space between each bench of open cast mine. The reliability analysis method of mining technological system in mine design is discussed in this paper. The probabilistic approach used here takes into consideration the uncertainty associated with estimation of most economic, mining and geological variables. This paper concerns the rational distribution of reserves which can be mined and waste advancing down the open cast site at steep pitch deposit.

Key words: mining technological system, mineral losses, rationing, reliability, complex structural deposits, open cast mine.

Hrunina N.P. THE STUDY OF HIGHLY-CLAYEY SANDS PLACER DEPOSITS (BROOK RABID)

Research results of natural humidity, density, characteristic impedance, dispersion of sand faction, element composition, ultrasonic velocity in the samples highly clayey gold bearing sands placer deposits brook Rabid. Clay minerals are composed of some sections. Directions of further research of highly clayey sands that will identify factors influencing on disintegration.

Key words: highly-clayey sands, humidity, density, dispersion, element composition.

The Physicotechnical control of processes mining manufacture

Zagorskiy L.S., Shkuratnik V.L., Chervintchuk S.Yu. OPTIMIZATION OF DEPLOYMENT OF BOTTOM STATIONS USING NATURAL SEA DISTURBANCE AS THE SOURCE OF MICROSEISMS IN THE SHELF AREA

The work was conducted with the financial support from the Ministry of Education and Science of the Russian Federation. This paper discusses the use of the natural sea disturbance and coastal surf as the sources of Rayleigh waves as the sounding signal in the measuring method of vertical seismic profile and the microseismic sounding method at the stage of exploration and development of deposits in the transit zone of the sea shelf.

Key words: seismic cut the transit zone of the shelf, the bottom station.

Enrichment of minerals


The subject of the research is an impregnated copper-nickel ore specimen. Nickel and cobalt are represented by pentlandite, copper sulphide is mostly represented by chalcopyrite. Basic mineral of host rock is serpentine. The article describes the developed magnetic separation and flotation circuit yielding nickel concentrate suitable for converter matte smelting.

Key words: magnetic separation, flotation, nickel concentrate.

On the basis of the methodology nanoindentation assessment of the magnitude of the coefficient of viscosity of destruction on the border of the accretion of magnetic and nonmagnetic phase in iron quartzites. The comparative analysis of the sizes cracks, arising as a result of nanoindentation, on the border of the phases of the samples of the affected and unaffected preliminary magnetic-pulse processing (M & e).

Key words: AFM nanoindentation, magnetic impulse educational development, the coefficient of viscosity of destruction.


Consider the conditions for use of the law of additivity for the evaluation of the output of finished product from a multi-component charge on the example of the two-component mixture, when the nonlinearity of the processes of crushing and enrichment of the individual components of the mixture. Determination of value of deviations from the law of additivity. Formulated by the criterion of optimization of the quality of the obtained concentrate of multi-component charge taking into account the technological properties of each monoproduct.

Key words: model of enrichment, multi-component charge, the quality of the concentrate.

Golikov A.S., Naumenko V.G., Fedoseeva S.O., Nazimko L.I. SIMULATION OF WATER-SLIME FLOWSHEET WORK, DEWATERING AND FLOTATION PROCESSES DURING COAL PREPARATION

Some results of slime accumulation simulation in circuit flowsheet of coal preparation plants and phase’s interaction during coal sediment dewatering in it different mechanical state and flotation are presented.

Key words: simulation, coal, slime accumulation, filtration, speed, shear, flotation.

Krozlov V.A., Pikalov M.F. COAL MOISTURE—IMPORTANT PRODUCT QUALITY PARAMETER

The article reviews current knowledge on coal moisture types and operating standards of coal moisture determination in Russian Federation.

Key words: coal moisture, external moisture, air-dry state of fuel, absorbed water, capillary water, free water.

Krasnov G.D., Koporulina E.V., Krasnov A.N., Chikhladze V.V. MINERAL MILLING SELECTIVITY EVALUATION

The authors compare conditions and yield of ore milling in conical inertial crusher KID-100 and in volume compression test pressing machine MIS-100K. Test materials were sulfide associate samples: sphalerite from Dalnegorsky deposit and nickel-bearing pyrrhotine from Oktyabrsky deposit. Material constitution analysis of the initial and crushed specimens involved electron microscopy, optical analysis, fractional analysis and derivatography. The authors offer a formula for estimating commercial mineral concentration per size grade.

Key words: crushing, mineral assemblies, milling selectivity, sphalerite, pyrrhotine.

Lavrinenko A.A., Sarkisova L.M., Shrader E.A., Chikhladze V.V., Shimbukas Ya.M. EXTRACTABILITY OF SULFIDES FROM COPPER-NICKEL ORE CONCENTRATIONTAILINGS BY FLOTATION
Based on the analysis of processing behavior of rich copper-nickel ore concentration tailings, it has been found possible to extract up to 75% sulfides and noble associates by flotation and to reduce sulfur content to 2–3% in backfill preparation material. The effect of applying hydrophobic polymer to flotation of slurry tailings is illustrated.

Key words: copper-nickel ore, ore concentration tailings, platinum-group metals, pyrrhotine flotation, slurry, hydrophobic flocculation.

Nedosekina T.V., Gapchich A.O. CONVENTIONAL AND NEW REAGENTS FOR GOLD ORE FLOTATION ......................................................... 103

The article describes the studies into the flotation properties of gold-coated and gold-free pyrite. The reported results of gold-coated and gold-free pyrite using xanthogenate and sodium disobutyl dithiophosphinate (DIPH) evidence the improved ability of the DIPH reagent.

Key words: gold ore beneficiation, gold-bearing pyrite, pyrite, flotation, reagents, sorption.

Romanchuk A.I., Tikhvinsky A.V., Zharkov V.V., Bogomolov V.A. PHOTOMETRIC SEPARATION OF DIFFERENT KIND GOLD ORE.................. 109

The authors present the results of research into different kind gold ore treatment by photometric separation to concentrate and discardable tailings.

Key words: gold ore, photometric separation, concentrate, tailings.

Yakubailik E.K., Kilin S.V., Kilin V.I., Ganzhenko I.M. MAGNETIC PROPERTIES AND PROCESS WET SEPARATION OF THE PRIMARY CONCENTRATE IRON ORES SIBERIA ................................................................. 114

The results of investigation of the main magnetic properties and the separation parameters obtained laboratory wet separation nine primary concentrate magnetite and sub-acidulute siberian ores deposits – raw materials of Abagursk preparation plant are present. Recommend sub-acidulate ores to concentrate at common charge with the magnetite ores for decreasing the losses of the iron with tailing.

Key words: magnetic characteristics, primary concentrate, magnetite, oxidic ores, wet separation, separation parameters obtained.

Mathematical modelling

Aristov A.O. QUASI CELLULAR NETS. SYNTHESIS AND CIRCULATION ...... 125

There is a new type of dynamic discrete structures without signature. It named quasi cellular nets. It includes features of graphs, cellular automatons, Petri nets. Quasi cellular nets may be used in micro- macro – and mesoscopic simulation systems with flow circulations.

Key words: Quasi cellular net, discrete structure, flow, circulation, simulation.

Rutkovsky A.L., Bigulov A.V., Bilanov B.D., Dzantiev S.Sh. MATHEMATICAL MODELING APPROACH TO ANALYZING GAS FUEL BURNING IN TORCH ................................................................. 131

The article describes mathematical model of gas fuel burning in torch, equivalent to an actual process within a wide range of parameters, enabling valid heat calculation for industrial equipment packages.

Key words: mathematical model, gas fuel, torch.

Solodenko A.A., Podkorytov I.Yu. ON MATHEMATICAL MODELING OF PARTICLE MOVEMENT IN MAGNETIC SEPARATORS ................. 139

Using the Rayleigh curve approximated within the medium range Reynolds numbers, the authors have constructed and solved differential equation of mineral particle movement along the line of magnetic forces. The resultant expression is of use to modeling particle movement in magnetic separators.

Key words: magnetic separator, hydrodynamic resistance of medium.
In work the algorithm for determination of an analytical solution which allows to model the intense-deformed condition in the retinue of coal layers and dead rocks at a gravitation operation is offered. Boundary conditions for the mixed boundary value problem of the theory of elasticity at which the received numerical solution will agree with analytical, received on the offered algorithm are selected.

Key words: rock massif, coal stratum, deads, finite difference method, theory of elasticity selvage problem.

Physics of rocks and processes
Kovrizhnykh A.M., Seryakov V.M., Kovrizhnykh S.A. DEFORMATION AND FAILURE OF ROCKS AROUND UNSUPPORTED MINE WORKINGS UNDER CREEP CONDITIONS ................................................................. 147

The model based on the maximum shear stress and the power law, was employed to solve the problem on deformation and failure of a cylinder-shaped mine working under creep conditions. Stress, strain, yield, location and rate of the failure front advancement are evaluated at any study moment. New solutions for a plane deformation of an elastic-creeping rock mass under unstationary creep conditions are obtained.

Key words: creep, plasticity, creep-rupture strength criterion, failure, mine working.

Martynyuk P.A., Pavlov V.A., Serdyukov S.V. INTEGRATED USE OF HYDRAULIC FRACTURE AND DEFORMATIONAL MEASUREMENTS FOR PERMEABLE ROCK STRESS ESTIMATION ........................................... 155

Method of stress state estimation based on integrated use of hydraulic fracturing and following measurements of borehole outline circular deformations is proposed. Mathematical model has been created and numerical modeling of borehole outline circular deformations evaluation has been carried out. The model is built for the case with two creaks while loading by urethane sleeve.

Key words: hydraulic fracturing, circular deformations, deformational measurements, reopening pressure, relation of principal compressive stresses.

Pogorelov Yu.S., Adigamov B.Ya., Gensel G.N. INTEGRATED GEOELECTRIC EXAMINATION OF ROCKS AT LEVEL 8 IN INTERNATIONAL MINE, ALROSA CO............................ 164

Conduction dipole electric profiling, georadar survey and parametric measurements of electrical resistivity in the floor and wall rocks of a ring drift have been accomplished, which allowed assessment of geometric pattern and predicted regularity of the rock mass jointing.

Key words: electric profiling, georadar, parametric measurements, drift, rock mass jointing.

Seryakov V.M. A METHOD FOR MODELING FAILURE OF ROCK MASS IN THE VICINITY OF WORKED-OUT AREA .......................................................... 173

Process for computation of the stress-strain state of a rock mass at undermining area is proposed. The process is based on the interactive procedure for initial stresses applied to model the main characteristic of rock failure above a worked-out area, namely the loss of a mechanical bond with the rock mass environment.

Key words: rock mass, failure, stresses, strains, modeling, initial stress method.

Khokhulya M.S., Maslova M.V., Gerasimova L.G. INFLUENCE OF AQUATIC ENVIRONMENT ON THE STRUCTURE AND TECHNICAL PROPERTIES OF PHLOGOPITE CRYSTALS IN THE LONG-TERM STORAGE CONDITIONS............................................... 180

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Conducted research on the influence of the degree of hydration of crystals phlogopite of varying thickness and area, the long-term stored in underground conditions of the mine, the structural features of phlogopite and its thermal and electrical properties. Noted the deterioration of the technical properties of the crystals-phlogopite, expressed in low breakdown voltage and increasing the rate of expansion.

Key words: phlogopite, underground camera, ion exchange, leaching, octahedral position.

Building of underground constructions and mines

Shubin A.A., Shubin M.A. ASSESSMENT OF STATE OF SHOTCRETE-AND-FIBER FILLER STRUCTURES ................................................................. 193

Advantages of the use of dispersible fibres are noted in composition concrete mixtures during the leadthrough of different sort of build and gomo-build works. The quantitative indexes of properties of torkret — fibro of concrete compositions are resulted.

Key words: gunite concrete with polypropylene fibers, sedimentation, crack-resistance of the material, cracking.

Mining cars, the equipment and transport

Blokhyn V.S., Lyfentsov À.S., Malych N.G. MACHINES FOR EXCAVATION WORKS - one of the elements of analysis of the technical and economic potential of General machine-building of the country................................................. 197

On the example of consideration of the state of machines for earthworks the analysis of modern progress trends of machine-building complex of country is conducted. The possible ways of development of the folded situation are shown, the necessity of creation of large mezhotraslevykh machine-building corporations under the control the state for the increase of competitiveness of domestic industry is grounded.

Key words: machine for the excavation works, the mining and metallurgical and technological processes, the basic design and technological parameters, efficiency, competitiveness, General engineering.

Zhigulskaia A.I., Yakonovskaya T.B. EQUIPMENT FOR NON-WASTE RECYCLING SCHEME PEAT AND WOOD INCLUSIONS............................... 208

Technological schemes of peat deposits and repair the fields of production, including operation reports of shrubs and low forests, grubbing and removal of the stump of the continuous milling of a deep reservoir are presented and discussed in the light of the proposed options for integrated resource use peat deposits, improvement and modernization of equipment used.

Key words: report, stub extraction, technical crushed wood of a peat deposit, wood inclusions of peat, the binding additive type of peat, degree of decomposition, pristost, contamination of mineral inclusions.

Krapivsky E.I., Yabluchansky P.A. ALGORITHM FOR AC TRANSMISSION LINE ELECTROMAGNETIC EFFECT ON UNDERGROUND PIPEWORK ....... 213

Reliability of main pipelines is largely dependent on the state of corrosion protection. Recently, much attention is paid to prevent the effect of high-voltage AC power line on corrosion condition of the pipeline. The paper presents the algorithm to estimate the dangerous influence of power lines by calculating induced electric potential and leakage current density complexes on the pipeline.

Key words: ac corrosive attack, ac transmission line electromagnetic effect on pipework, power line hazard effect on pipework.

Fedotov P.K. PROCEDURE FOR ESTIMATING AXIAL PRESSURE FORCE DURING MATERIAL FAILURE IN ROLLER-PRESS ........................................ 225
With intent to determine and optimize axial pressure force in bulk failure of ore, the authors analyzed ore disintegration process using mathematical modeling based on finite element method numerical solution.

Key words: ore, finite element method (FEM), disintegration, roller-press, micro-flaws, crack, stress, selectivity, failure, pressure, force.

L’vov V.V., Andreev E.E. INFLUENCE OF SLURRY RHEOLOGY ON THE PARAMETERS OF CLASSIFICATION IN WASHING CYCLONE

The study focuses on influence exerted by slurry viscosity on classification in a test hydrocyclone unit equipped with a flow viscometer. Modified Plitt model was used to estimate size d_{50c}. As distinct from the initial model without regard to slurry viscosity, the modified model includes the viscosity as the directly measured parameter. The model modification allows more precise forecasting of the near-mesh size. According to the study, d_{50c} is proportional to slurry viscosity to power 0.35.

Key words: slurry viscosity, hydrocyclone, rheology.

Matveev A.I., Shirman G.V. FEATURES DISINTEGRATION DENSE CLAY AGGREGATES IN WASHING MACHINE DRUM WHEN ADDING MACROFRAGMENTAL MATERIAL

The article describes the research on the studies of the formation and destruction of clay rolls with burdening macrofragmental material with high clay sands in the process of disintegration in the washing drums of different designs.

Key words: disintegration, flushing, sands with high clay content, wash drum, clay rolls.

Nagornov D.O., Kremtcheev E.A., Mikhaylov A.V., Bol’shunov A.V. THE HINGED MODULAR MECHANIZED COMPLEX FOR EXTRACTION AND PRIMARY PROCESSING OF PEAT

In article the hinged equipment of a dredge and a face-to-face loader for peat extraction is considered. The analysis of design features screeners sifting crushers is carried out.

Key words: technology of mining, bucket, screeners crusher, career way.

Pozharskiy Yu.M., Poleshenko D.A., Podkovyrov I.Yu. THE WET SELF-GRINDING MILL FILLING DEGREE DETECTION WITH WIRELESS TECHNOLOGIES USING

The questions about system configuration for wet self-grinding mill filling degree assessment with wireless technologies using are considered. Vibroacceleration has been measured on the example of the LGOK mill by the means of acceleration gage fixed in the drum surface. The connection between the mill drum surface vibroacceleration and the degree of object filling with the ore material has been shown as a result of this signal proceeding by the means of spectral analysis.

Key words: mill filling degree, acceleration gage, spectral analysis, wet self-grinding degree, vibroacceleration.

Usenko A.A., Voronin A.I., Gorshenkov M.V., Zadorozhny V.Yu., Korotitskiy A.V., Maradudina O.N., Khovaylo V.V. STUDY OF COMPACTING MECHANISM OF SI-GE-BASED BULK NANOSTRUCTURED TERMOELECTRIC

In this work we present results of the comparison of two methods for compacting nanopowdered thermoelectric materials which allow one to preserve the ultra-dispersed structure in the bulk materials.

Key words: thermoelectrics, Si-Ge, nanostructure.

Usov A.F., Potokin A.S. CONCEPTUAL SOLUTIONS TO CREATE COMPACT ELECTROTECHNOCAL EQUIPMENT FOR TECHNOLOGY ELECTRIC PULSE FRACTURE OF MATERIALS

In this work we present results of the comparison of two methods for compacting nanopowdered thermoelectric materials which allow one to preserve the ultra-dispersed structure in the bulk materials.

Key words: thermoelectrics, Si-Ge, nanostructure.
The new technical solutions in the creation of chargers and techniques to generate high voltage pulses, providing a significant improvement in specific energy and mass-dimensional characteristics of the installation electric pulse destruction of materials are proposed.

**Key words:** electric pulse, disintegration, disaggregation, charger battery, generator of high voltage pulses, pulse transformer.

### Geology

**Kalinichenko V.A., Petrakova N.N.**  PROBLEM OF RARE METAL SHORTAGE, THE SOURCES OF MINERALS AND RAW MATERIALS, THEIR EXPLOITATION AND PROCESSING

The article reviews extensive literature on usage of rare metals in high-technology innovations introduced in different industries. The state of the raw material resources meant to supply mining and metallurgical industries is analyzed. The authors discuss the widespread rare metal fabrication technologies and report their own research on integrated polymetal rough stock processing. The article is closed with the world-wide rare metal market analysis.

**Key words:** rare metals, rare-earth elements (REE), extraction technologies, mineral and raw material basis.

### Labour protection and safety of mining works

**Lyahomskiy A.V., Pichuev A.V.**  INFLUENCE ASYMMETRIES PARAMETERS TO INSULATION ON DANGER ELECTRIC TRAUMATIZE TOUCH OF THE PERSON TO PHASE OF THE MINING DISTRICT ELECTRIC COMMUNICATIONS

In article are brought results of the analysis to dangers of the defeat of the person by electric current under his touch to phase of the electric communications with asymmetrical parameter of the insulation. Motivated need of the complex account in factors, influencing upon electric safety, asymmetries phases of the voltages and order of the combination phases resistances with provision for place of touch of the person to electric communications.

**Key words:** electric safety, current through insulation, asymmetry of the voltage, voltage of the offset neutral comparison, current through person.

### Aerology

**Fomin A.N., Sverdlik G.I., Viskrebenets A.S.**  LIQUID AND SOLID PARTICLES CATCHING IN THE VENTILATION AIR STREAM DURING MINE VENTILATION

The necessity of liquid and solid particles catching in the pipeline located in the vertical hole was grounded. The ventilation mine scheme using the turbo-chargers as well as drip pan design were presented.

**Key words:** liquid and solid particles catching in the ventilation air stream during mine ventilation.

### Geotechnology, geodynamics, geomechanics

**Boriskov F.F., Alenitchev V.M.**  USE PHYSICS - TECHNICAL GEOTECHNOLOGIES FOR INCREASE OF EFFECTIVENESS OF WORKING RAW MATERIAL

Use electrohydraulic (EH) blows by duration of 10 nanoseconds raises gold extraction by cyanid from enrichment tails copper-pyrite ores 17 to 87 %. The increase in capacity EH of blows with 0.1 to 0.3 T/h changes sulphatic type of decomposition of sulfides to the hydrosulphuric.

**Key words:** electric impulses, electrohydraulic blow, duration of 10 ns, processing of a waste, sulphatic and hydrosulphuric decomposition sulfides.
Explosive works

Baiborodov Ya.N., Eremenko A.A. COMBINED EXPLOSIVE CHARGE BLASTING IN CONTIGUOUS ORE BODIES ................................................. 288

The data on breaking a block by composite explosive charges are reported. The combined blasting effect of vertical concentrated and contiguous explosive charges of different diameters on the broken rock grade is demonstrated.

Key words: mineral deposit, explosion, charges, rock mass, ore, powder factor.

Mangush S.K., Dolzhikov K.I. DIAMETER WELLS COMPENSATORY JUSTIFICATION IN APPLYING DIRECT KERF FOR THE INTENSIFICATION OF THE EXPLOSIVE DESTRUCTION OF ROCKS ............................................. 291

In the article an analysis of underground mine workings, are criteria effectively cut hole. Describes the experimental work, findings and analysis. Made recommendations diameter borehole compensation and specific energy on the strength of the rocks and the distance between the first cut hole and compensatory surface.

Key words: well, the utilization rate of the hole, the explosive charge, destruction, crack.

Economics and management

Velikoselsky A.V., Gorev D.E. INTRODUCTION OF INTERGRADED PROCESS AND PROJECT MANAGEMENT APPROACH AND THE MANAGEMENT SYSTEM VALUATION AT A COAL PRODUCING COMPANY ............................................. 297

The authors report the outcome of the integrated process and project management approach introduced at SUEK-Krasnoyarsk JSC for the purpose of higher efficiency and sustained development of the company. The development and operational experience of the management efficiency valuation procedure is described in the article.

Key words: integrated management system, integrated process and project management approach, management valuation, performance efficiency.

Galiev J.K., Serpukhovitina N.V., Galieva N.V. THE ECONOMIC ANALYSIS OF ACTIVITY OF THE ENTERPRISE FOR RELEASE OF CLEARING COMBINES IN MARKET STRUCTURE WITH THE PERFECT COMPETITION ............................................. 304

In article economic operating conditions of manufacturers of clearing combines in the conditions of market structure with the perfect competition to the accounting of elements of market structure to the imperfect competition are considered, the ratio of the limiting income and the price of clearing combines in various market structures is considered.

Key words: market structure, perfect structure, imperfect structure, limiting income, price of clearing combines, volume of release of clearing combines, manufacturer.

Ganitskiy V.I. ABOUT THE MANAGEMENT OF AND PROSPECTS MOSCOW SCHOOL OF ROCK .................................................................................. 308

Given the definition of the term «management», as the management of socio-economic systems in conditions of market economy.

Key words: management, management, management of human beings, the Institute, the mining engineers.

Katcheyants M.B., Katcheyants G.M. VALUATION OF COAL MINE BY ADJUSTED PRESENT VALUE ........................................................................................................... 314

The mechanism of the mining enterprise valuation using the adjusted present value. The developed approach allows for complex taxation of coal mines in conditions of high uncertainty of their operation. Given economic and mathematical model for evaluating the cost of the mine with the differentiation of the stages of the life cycle.

Key words: coal mines, within a holding lending, mine.
Melnikova O.V., Velesievich V.I.  
**ESTIMATING EVENTUALITY OF MINING COMPANY BANKRUPTCY** ................................................................. 323
Upon having systematized existent methods and models for estimating eventual bankruptcy of a mining company, the authors substantiate the demand for new related procedures and offer a model of integrated financial rating of a company using 9 coefficients. Finally, the article forecasts bankruptcy potential at an actual mining company.

Key words: mining company, estimation, financial position, forecast.

Putchkov A.L.  
**SYSTEM MANAGEMENT OF EXPENSES FOR ACTIVITIES OF SAFETY IN THE COAL MINE** .................................................. 332
Coal mine — it is a complicated mining technology system, and man-made accidents and catastrophes in it — a sign of systemic error interaction of its functional elements and sold in her mining process. Safety and the prevention of industrial accidents and disasters in coal mines — the most vital problem for the mining industry in Russia. Consistency of the functional elements of the mine and its place in the mining process reduces the likelihood of accidents and man-made disasters in the coal mine, reduces damage from them.

Key words: Coal mine, technological, accidents, methane, safety measures, preventive actions, compensatory measures, the cost of the event, the consistency, the damage from accidents.

Khetchumov A.A.  
**ECONOMIC-MATHEMATICAL MODEL OF AN ESTIMATION OF ACTIVITY’S EFFICIENCY OF THE MINING COMPANY TAKING INTO ACCOUNT EXPENSES FOR MINING PRODUCTS BY CONSUMER** ............................ 338
At an estimation of efficiency of the mining company activity taking into account expenses for its delivery to the consumption’s places. It is necessary to make the decision for choice of the most profitable variant. The model of an estimation of efficiency of the mining company activity is offered in this work by coal production taking into account expenses for coal production in places of its consumption.

Key words: costs of mining company, assessment of efficiency.

**Economy and nature management ecology**

Bubnova M.B.  
**APPROACHES TO THE ASSESSMENT OF ENVIRONMENTAL POLLUTION FROM COAL MINING (THE CASE OF DEPOSITS AMUR-ZEYA LIGNITE BASIN)** ................................................................. 340
The article presents the ecological situation in the fields of the Amur-Zeya brown coal basin and proposed approaches to assessing environmental pollution from coal mining.

Key words: brown coal deposits, open-cast mining, industrial pollution, assessment of the extent of contamination, environment.

Lipina L.N, Alexandrova T.N, Grehnev N.I.  
**ECOLOGICAL-GEOCHEMICAL ASSESSMENT OF THE BASIC COMPONENTS OF MINING AREA ENVIRONMENT (by example OF CLOSED CORPORATION «MNOGOVERSHINNOE»** ) ....... 348
The ecologicalgeochemical assessment of the atmosphere, hydrosphere, soils, vegetation and lithosphere of one of the mining areas of the Khabarovsk Territory is carried out in the article. Prior toxicants and their forms are identified. Complex analysis allowed revealing some spatio-temporal parameters of polluted areas; the above data are the basis for the large-scale environmental mapping of the studied area.

Key words: ecological and geochemical assessment, toxicity, complex monitoring.

Terentiev B.D., Mukhin S.E.  
**PROBLEM OF THE COAL INDUSTRY WASTES IN TERMS OF THE EAST DONBASS AND THE PROBLEM RESOLUTION TRENDS** ................................................................. 356
In this article the problem of a waste of the coal-mining industry on an example of East Donbass is considered. Characteristics of formation of a coal waste are analyzed. On the basis of the carried-out research by the author research the basic technological directions of realization of processes of coal mining for decrease in negative impact of underground mining works on environment are defined.

Key words: coal mining, environment, waste.

Tarasenko I.A., Zinkov A.V. ESTIMATION OF ECOLOGICAL SAFETY GROUNDWATER BASIN AT CLOSURE OF COAL MINE OF PRIMORSKI KRAI (BY THE EXAMPLE OF MINE «LIPOVESTHYK»)........................................ 362

The estimation of ecological safety of Groundwater basin in area of liquidated mine lipovesthky is executed. Hydrogeochemical features of underground waters are considered. It is established, that after flooding mine in a mining file were generated man-caused waters which differ from natural waters ionic type and a chemical compound. The waters of mine possess the mineralization raised in comparison with natural waters, rigidity, sulfates and contain in the structure components (iron, manganese, phenols, mineral oil and others) in the quantities exceeding maximum-permissible concentration. Hydrogeochemical water pollution survey have shown, that outside claim water drainage of the watersealed coal mine do not render ecological influence.

Key words: the liquidated mine, underground water pool, ecological safety.

Trushina G.S., Shipachev M.S. ROLE OF ECOLOGICAL MANAGEMENT AND QUALITY MANAGEMENT IN NATURE PROTECTION ACTIVITY OF THE ENTERPRISES (ON THE EXAMPLE OF THE COAL-MINING ENTERPRISES OF KUZBAS)..................................................................................... 375

In article the role of ecological management and a quality management in improvement of nature protection activity of the coal enterprises on an example of Kuzbas is shown.

Key words: ecological management, nature protection activity.

Boring technologies

Malukhin N.G., Drobadenko V.P., Vilmis A.L., Shchemerov A.A. ENHANCED BOREHOLE HYDRAULIC MINING DUE TO OPTIMIZED SLURRY PREPARATION AND SUCTION............................................................................. 378

The authors analyze issues of borehole hydraulic technology using unstable sand slurry, offer an alternate arrangement of hydraulic jet and describe the revealed head and flow characteristics of airlift.

Key words: borehole hydraulic mining, giant jet, hydraulic elevator.

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Shek V.M. DISRITS-2 IN GEOINFORMATION SYSTEMS................................. 386

The article considers the peculiarities of geoinformation systems application in the mining business. The necessity for the inclusion in the composition of the space-attribute information such GIS data about the petrographic and physico-mechanical properties of rocks for volumetric modeling stability of mine workings and their surrounding arrays of species. The aim of the simulation is to ensure safety of mining operations at the deposits of hazardous of rock shocks and sudden outbursts of rock and gas.

Key words: mining enterprise, a mineral Deposit, the rocks, geographic information systems, space-attribute information, rock shock, sudden burst of mining weight and gas, diskrit.

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The article presents the results of studying the time between failures and the repair time of a tunnel boring machine complex.

Key words: reliability, time between failures, tunnel boring machine complex.

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The analysis of placement of government orders in the USA, some EU countries and Brazil is carried out and ways of placement of orders and their efficiency are considered in this article.

Key words: government order, procurement, placement, auction, competitive tenders, bidding, state contract.

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The influence of terms of implementation investment project on level of consumption the energy resources on ore-dressing enterprise was considered, also economical estimation of its efficiency proceeding from the size of derived economic effect by production of iron-ore output was proposed. As criteria of economic estimation efficiency of energy saving measures was calculated indicator, which reflected the price of economized volume the energy relatively investment and operation costs.

Key words: energy saving technologies; investment project; ore-dressing enterprises.

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Ilyakhin S.V., Maslov I.Yu. CHEMICALLY GASSED EMULSION EXPLOSIVES WITH DRY COMPONENT AND EMULSION EXPLOSIVES SENSITIZED WITH FOAMED POLYSTYRENE: EXPLOSIVE DENSITY HEIGHT-WISE BLASTHOLE CHARGE ................................................................. 19

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