UNIVERSITATEA DE NORD DIN BAIA MARE

FACULTATEA DE RESURSE MINERALE ŞI MEDIU

BULETIN ŞTIINŢIFIC
AL UNIVERSITĂŢII DE NORD DIN BAIA MARE

SERIA D
Exploatări Miniere
Prepararea Substanţelor Minerale Utile
Metalurgie Neferoasă
Geologie şi Ingineria Mediului
Volumul XXIV Nr. 1

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GENERAL CONSIDERATIONS ON WASTE MANAGEMENT IN ROMANIA

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ABSTRACT: *Raised awareness humanity has been experiencing concerning a lurking danger - the incessant environmental degradation - has added a new dimension to the issue of waste management. The recycling and environmental protection sectors are deeply dependent upon one another, since an increase in recycling significantly ushers polluting pressure off the environment.*
Since economic development is a major cause of environmental degradation, under the principle of sustainable development it is necessary to reconcile the objective of increasing competitiveness with that of protecting the environment.
In Romania, the recycling sector functions as a distinct sector of the economy. There is a network of recycling facilities throughout the country that virtually covers the full array of recyclable materials and waste. Compared to EU countries, the lack of specialized "product" units affects both the equipping possibilities and the material quality.
As an inchoate regulatory structure of waste management, the waste management practices in Romania are not well developed and rely heavily on deposits on landfills. It should be noted that the vast majority of landfills, by the way they are built, by the way they are operated, are far from complying with environmental requirements.
One can observe that Romania does not own a sufficient technological capacity for managing, recycling or recovering large amounts of waste and for using them as raw materials for other processes. Under these circumstances over 93% of the waste generated in Romania ends up on such sites, although it incorporates useful materials such as: glass, metal, paper, plastic etc. Compared to developed countries, the technical and technological support of recycling firms is modest, such that most of the collected materials are only subject to manual dismantling types of operations, except for scrapping activities.The financial hindrances faced by economic agents prevent the application of research results, whereas the legislation does not always allow financing technological transfers.
Encouraging investment in recycling industries in Romania could bring enormous benefits, creating new jobs and truly promoting environmental protection.

KEYWORDS: *integrated waste management, recyclable materials, selective collection, sustainable development, environmental protection strategy*

THE INFLUENCE OF MINE WASTE DEPOSITS ON THE QUALITY CATEGORY OF AN EMISSARY

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ABSTRACT: *The paper shows the influence of specific contaminated (pH, turbidity, iron and sulfates), the quality category Envoy Cavnic Valley. The presence of landfill near envoys has made possible the involvement of specific pollutants in those. These issues are quite common in the mining perimeters, making emissary to fit into different grades along the route or area (under order 161/2006, approving the Norms on classification surface water quality in order to establish the ecological status of water bodies).*
Analyzing the values obtained for studied pollutants from sampling point located downstream of the confluence of Cavnic River with Rachitele stream, the river will fall into the fifth quality category, for all examined indicators. Elevated values for total iron, sulphates and acidic pH, can be explained by entrainment of fine particles of tailings into the river water, but especially by the presence of seepage from the tailings dam Rachitele- Plopiş and direct leakage. Oxidation reactions of the present sterile rock in the pound favour lowering of pH and increasing the levels of iron and sulphates, these phenomena are favored by granulometry of stored material, the presence of sulphuric minerals (pyrite,

marcasite), direct contact with water and atmospheric air. It is a first indication that mining still has a negative impact on the environment, in particular upon water and soil. But we must mention the fact that the mine waste, deposited in the tailings pound, has no leached metals, thereby these elements are not so directly involved in the composition of tailings. To diminish the effects of tailings dam on the water quality of Cavnic River, ensuring chemical stability of the pond Plopiş-Rachitele in a same time with mechanical stabilization measures is proposed. Chemical stability of the facility may be provided either through an appropriate seal or by controlling the oxidation reactions of the stored material.

KEY WORDS: *mine water, pH, ions sulfates, iron, emissary, tailings dam*

THE CONTROL OF HEAVY METALS` ANTHROPIC POLLUTION THROUGH THE MONITORIZATION OF ENVIRONMENTAL FACTORS SOIL-VEGETATION - CASE STUDY IN CITIES BISTRITA AND BECLEAN -

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ABSTRACT: *As certified by numerous sources, all human activities produce a higher or lower quantity of various pollutants that at a certain time can all become sources of environmental pollution. Therefore, a deep understanding and monitorization of these activities is a necessity. A monitorization of the environment, performed correctly in terms of space and time, can give valuable information on the socio-economic reality of a zone, complementing or adjusting, as appropriate, the overall picture. The study presented aims to show how data can be useful for monitoring a system of heavy metals in soil and vegetation and how many and mostly correct can be the interpretation of these data.*
We start from the analytical results of soil and vegetation collected from industrial and residential areas of the two cities in Bistriţa-Năsăud, looking closely at the development and it's trends. By processing the data we can outline a series of hypotheses about the possible sources of heavy metals found in these samples, the intensity and the development of those sources during different periods of time. Checking the veracity of these allegations, made on the basis of historical data and economic statistics, we can prove the utility and necessity of monitoring systems.

KEY WORDS: *Anthropogenic pollution, monitoring, soil-vegetation, heavy metal hypothesis*

THE MONITORING OF QUALITY THE CISLA RIVER BETWEEN 26-30 JULY 2008

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ABSTRACT: *The study presents the results of monitoring water quality of the Cisla River, between 26 to 30 July 2008, when Maramures county has experienced extremely heavy precipitation falls. The amount of water fallen, created emergency situation at ponds Colbu I and Colbu II, located in Baia Borsa - locality recognized with the high technological risk.*
The monitoring of water quality was conducted in section of the Cisla River at hydrometric station from Baia Borsa. The indicators considered in this study were: pH, total cyanide, sulfates, filterable residue and iron. These indicators were compared with values for five classes from Order 161/2006 of surface water quality.

KEYWORDS: *monitoring, pH, sulfates ion concentration, iron and filterable residue*

NOISE MITIGATION IN URBAN AREAS DUE TO TRANSPORT SYSTEMS

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ABSTRACT: *Rapid growing and development of urban areas in a relative short period of time means an important increase of the vehicles number. Traffic is present everywere in the urban area, having in its composition a different and large number of transport systems, and it is one of the main noise sources that seriously affects the quality of the urban life.*
European policy in transports requires more and more now the need to protect the environment. The need to find solutions in this case are the result of adopting measures in increasing railway traffic.
Noise produced by traffic or other sources are the result of heart desies of people living in large urban areas.
The distance to the noise source is the key factor, a duble distance is able to reduce the noise level up to 3 dB(A). Another important factor is the ground type: a soft lawn, rather than a concrete pavement, decreases the level by another 3 dB (A). The type of vegetation also contributes to the decrease, but the level depends on the type and density: between 2 and 6 dB (A). Sounds are propagated on long distances on water also.
Society is prepared to pay large sums for lowered noise levels. Technical solutions to decrease noise are, for example, 3-5 m high walls, able to reduce noise levels up to 10-15 dB (A).
The impact of the road traffic on the community depends on a large number of factors: the position and type of street/road, urban planning, constructions type, and vehicle type or drivers behavior.
Phonic pollution must be accompanied to studies in vibration mitigation due to trams and light metros or heavy vehicles.

KEY WORDS: *traffic noise, rail way transport, urban area noise*

SUBTLE OIL TRAPS IN THE ROMANIAN SECTOR OF PANNONIAN BASIN

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ABSTRACT: *Hydrocarbons represent the most important world's actual energy resource. Prospecting, evaluating and exploitation of the so called "subtle traps/reservoirs" appeared in a late stage of basins research related with technological advances and the depleting of the existing oil reserved placed in structural "classic" traps. We may estimate that more than more than 30% of the existing petroleum resources occur in subtle traps situated mainly in mature oilfields.*
Defining a subtle trap is a difficult task because the structural factor has a less important role the main factors being related with the sedimentary basin status and evolution factor as paleoshape, geomorphology, lithology, unconformities, having a major role in reservoirs delineation and trap existence.
Almost all sedimentary basins contains facies changes, discordance pinch out strata, erosion surfaces, paleorelief heights as buried paleohills and reefs, sand barriers, distributaries channels and other characteristic geological data forming the basic requirements for subtle traps occurrence. The number of these traps is estimated to be even higher than the structural one because they are a result of repeated depositional model, preceding or being contemporary with the secondary structures as folding/faulting processes.
Pannonian Basin has a long and complex tectono-sedimentary evolution creating specific oil traps forming conditions. First of all we have to mention the high geothermal gradient of the area, about 4 - 7°C/100m so even relatively young sediments generated consistent oil and/or gas amounts so the petroleum may occur both in older and young formations. Referring to the crystalline basement its upper alterate /fissured part provide good reservoir properties. Hence a lot of oil accumulations are hosted by these unconventional reservoirs. The productive interval of these reservoirs is delineate by the alteration degree thus sometimes the upper, most alterate; zone is not a good reservoir.
The sedimentary layers formed in mainly graben shape basins are characterized by important lithology variations inducing important reservoirs discontinuities, pinch outs, clay content and distribution of sandy layers, providing interesting subtle traps occurrence. Mapping and evaluation of these subtle traps from Pannoinan basin is a difficult

one involving geological, geophysical and production data corroborated in one comprehensive, reliable model, with consistent differences between the oil/gas structures.

***KEY WORDS**: oil traps, sedimentary basin, faccies, natural reservoir, crystalline, alterated, delineation.*

EXPLOITATION OF BROKEN PLATES ANDESITES IN SĂPÂNȚA AREA

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***ABSTRACT:** The broken andesites offer the natural harsh surface which give good closure with fixation binder and good harsh against slipping (traffic ways) without any thermal treatment (costly and intensive) which give the required harsh to other rock types. More than rational exploitation and valorisation of a reserve, an important assessment is the promotion of a natural product, with minimum investment, which offers working places and options for local people, injury to imported products, artificial, expensive, with inferior quality or to natural products treated mechanical.*

***KEY WORDS:** broken plates andesites, ornamental rocks, exploitation and valorisation, natural surfaces*

ADVANCED RECOVERY OF COMPLEX ORES USING EMULSIONS OF NON-POLAR REAGENTS

G. FILIP, M. PODARIU
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***ABSTRACT:** This paper presents the experimental tests on lead-zinc ores with gold content, witch were focused on decreasing the commercial metal losses from the final tailing by using emulsified non-polar reagents.*
The experiments were based on a comparative searching of the technological indicators, using or not, the emulsified non-polar reagent.
The motor oil, emulsified with an aqueous solution of soda ash, anionic collector and anionic frothing was used as non-polar reagent.
From the comparative analyses of the classical technology and flotation with emulsified non-polar reagent, results the increasing the flotability of Pb, Zn and Au metals.

***KEYWORDS:** flotation, reagents, surface properties*

INCREASING THE DURABILITY OF REINFORCED CONCRETE BY USING HOT DIP GALVANIZED REBARS

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***ABSTRACT:** Reinforced concrete is one of the most used man made materials, with applications in civil, industrial and military constructions. In order to reduce the effects of corrosion on the rebars, replacing the unprotected steel rebars with the more corrosion resistant hot dip galvanized steel is considered. [1, 2, 4-6, 8, 9].*
This paper presents the experimental results on the durability of the reinforced concrete and the influence of using hot dip galvanized rebar. The adhesion loss between the rebar and the concrete matrix for hot dip galvanized vs. unprotected steel reinforced concrete samples was studied. The kinetics and mechanism of rebar corrosion in the

reinforced concrete as a result of Cl ions, were studied by electrochemical analysis techniques (linear polarization [1, 6-8], electrochemical impedance spectroscopy). The experimental study leads to the following conclusions:

- *The experimental results reveal the good adherence that hot dip galvanized rebar has in the concrete matrix, similar with the literature [2, 4, 9];*
- *Hot dip galvanized rebars confer to the reinforced concrete structures a better resistance: in aggressive environments, to freeze-thaw cycles, the action of thawing salts, marine environment a.o. The reduced adherence loss demonstrates this;*
- *Based on the electrochemical analysis results it can be said that for hot dip galvanized rebars compared to the unprotected steel a reduction of the process's kinetics, corrosion rate and current is observed;*
- *The mechanism of the process qualitatively speaking is similar for both studied types of rebar, but quantitatively is more reduced, the galvanized rebar having a higher corrosion resistance.*

The benefits of using hot dip galvanized rebar can be quantified by the increase of the life expectancy of concrete structures and by reduced maintenance and exploitation costs. Hot dip galvanized rebar can be considered a partner in the sustainable development of reinforced concrete structures.

KEY WORDS: *corrosion, reinforces concrete, hot dip galvanized rebar*

METALLIC ELECTRODES AND ADSORPTION-DESORPTION PROCESSES IN MINERAL PROCESSING

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ABSTRACT: *The usage of electric field with the anodic dissolution of metallic electrodes as activators and depressors at flotation ensures the electrochemical formation of the requested ions directly in the pulp.*
The electrochemical generated metallic ions have a bigger flotation activity, comparatively to the same metallic ions produced by the hydrolysis of suitable chemical reagents, because of their finer dispersion. The application of anodic dissolution of metallic electrodes is directly related to the semiconducting characteristic feature of the minerals that are floated. The method has not only the role to activate and depress the minerals but also has a significant influence on the entire flotation process. The electrochemical characteristic feature of minerals surface is an important factor which causes the superficial flotation features of the minerals. The change of flotation activity for the minerals, affected by the electric field, is caused mainly by the change of minerals surface electric loading because of the direct contact between the mineral particles and the surface of working electrodes, by the displacement of the pulp redox potentials value towards positive or negative values, and by the influence of the external electric field on minerals electrode potential.
The changes into the liquid and solid phases from the pulp are related to the conditions of treatment within electric field and to the mineral surface's state.
The researches had as purpose to establish the optimum working parameters at flotation by replacing chemical activators and depressors with the anodic dissolution of the suitable metallic electrodes, in order to prove the efficiency of using metallic electrodes. The method ensures also: the possibility of obtaining, directly in the pulp, very finely disseminated metal compounds, with higher activation ability, at a smaller metal consumption for the same activation effect; the exactly choice of the determined quantity for the metal ions by regulating the electric energy consumption at the supply of the working electrodes; the possibility of regulating the electric field's influence on the entire flotation system.

KEYWORDS: *metallic electrodes, flotation, minerals*

NECESSITY OF TODAY: NOISE REDUCTION

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ABSTRACT: *Whether knowingly or unknowingly every one of us contribute to noise pollution because most of our day-to-day activities generate some noise. Often neglected, noise pollution adversely affects the human being leading to irritation, loss of concentration, loss of hearing. At the European level to protect the population against noise problem is*

very important and is treated with great responsibility by the authorities, with air pollution and waste management. In terms of contemporary civilization, man still lives in a sound environment. Everywhere he is accompanied by a procession of sounds and noises of the different intensities, with effects more or less aggressive on his comfort and even health. The paper is an overview of noise issues in terms of environmental policy. It identifies the main sources of noise pollution and propose ways to control and noise reduction.

KEY WORDS: *pollution, noise, noise level, absorption, isolation.*

EXPERIMENTAL RESEARCH FOR DETERMINATION OF OPTIMAL GRINDING SOFTNESS FOR ROATA SULPHURIC MINERALIZATIONS, CAVNIC

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ABSTRACT: *This paper presents the results of experimental research in order to obtain optimal smoothness grinding wheel for Roata mineralization, Cavnic. Zinco-ferric lead type mineralization veins, consisting of common sulfides: pyrite, lead wild, galen in the gangue of quartz, chalcopyrite, clay minerals and carbonates.*
The analysis indicated the presence of lead minerals in rate of 74.44% as sulfides and zinc minerals at a rate of 92.88% as sulfides.
Microscopic analysis of polished ore samples provided important data for assessing their behavior in the preparation. Lead wild form massive aggregates or deposits into strips, wide beaches sfalerit (2.8 to 5.2 mm) are furrowed by granular Galen, chalcopyrite, pyrite and quartz. During the tests will be kept constant grinding working conditions (dilution of the mill, rod diameter, the amount of bars, number bars, mill speed) and will be variable only the grinding time 15 min, 20min, 25 min and 30 min.
Evaluating the dissolution of mineral concretions two tests led (25 min and 30 min) to the declaration of optimal grinding softness 73.75% -0.074 mm class, ground sample obtained at 30 min, where everyone is free mineral analyzed by more than 90% (blend 92.79% 95.72% galen; chalcopyrite 92.60%; pyrite 90.27%) and reduced concretions between relevant and debris elements.

KEY WORDS: *lead-zinc mineralization, optimal grinding, grinding time, mineralogical analysis*

THE THERMODYNAMIC ASSESMENT OF THE Cu-O SYSTEM IN THE COPPER THERMAL REFINING OPERATIONS

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ABSTRACT: *This papers approach the study of some thermodynamic properties of the Cu-O system, which represent the base of several technological processes in the pyrometallurgical copper. The research consisted of measurements of thermodynamic activity and the activity coefficient of oxygen in liquid copper at different concentrations vs. temperature at the 1150-13000 C. Particular emphasis was placed on determining the Gibbs free energy and entropy of solubilization of oxygen in liquid copper. Knowledge of the main thermodynamic quantities of the systems mentioned above to establish the optimal development of copper thermal refining operations that are based on the difference between metal affinity to oxygen. It also highlight opportunities for enhancing such processes and technological requirements needed to design alloys for obtaining high-purity copper or oxygen-free copper.*

KEYWORDS: *Cu-O system, thermodynamic analysis, activity coefficients, Gibbs free energy and entropy*

CONSIDERATIONS ON THE OPTIMIZATION OF THE EXTRACTION SYSTEMS OF THICK AND LARGE INCLINATION MINERAL DEPOSITS

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ABSTRACT: *The paper is destined to one of the activities with the highest weight and importance in the field of mining, and that is the scheduling of the production. Under the current circumstances, characterized by particularly complex influences being exerted over industrial processes, the ability to forecast the results of economic activities is an essential requirement in all the fields of activity.*
At first the bases of the activities aiming to schedule the production were rather empirical, but subsequently the managers began to apply methods specific to operational research. It was deemed necessary to come up with a model that would allow both the completion of the tasks resulting from the production schedules and a good organization in time with regards to the quality of the mining of the deposit.
The application of this model involved dividing the mining blocks into groups characterized by the following conditions: they lay at the same horizon forming a seamless line and they can all be mined through the same method. For each group of blocks we have established the reserves and the grades of lead, zinc and copper, as well as the grades in lead equivalent. Based on the methods applied to the component blocks we have determined the production capacity of that group.

KEYWORDS: *Mining, mining methods, mining systems, preparatory drivings, face cutting, model, optimum, optimization, system, complex system, system directed towards the achievement of certain aims, linear programming, dynamic programming, decision, multi-criteria decision, expenses, costs, profit, income, breakeven point, dynamic model, deviation, standard average deviation.*

RESEARCHES ON THE IMPURITY BEHAVIOUR IN THE ELECTROLYTE PURIFICATION PROCESS FROM CUPROM BAIA MARE

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ABSTRACT: *The quality of the cathode copper is mainly expressed by its purity and it is the essential parameter in the electrolysis process.*
The quality of the cathodic deposit depends on very many technological parameters-factors, among which can be mentioned: the composition of the anodes and the electrolyte, the current density, the electrolyte temperature, the circulation capacity of it, the mother-cathodes quality, admixture of surface active matter, etc.
Alloying elements behaviour from the copper was studied by SEM microscopy, and EDAX chemical characterization.
Some improvements have been made to increase the technical and economical outputs, especially the quality of the electrolytic copper.
Cathode deposit quality depends on many technological factors, like: anode nature and electrolyte chemical composition, anodic current density, electrolyte temperature, electrolyte flow rate, active materials added, etc; most of these factors can be controlled and maintained within some strict limits [11].
There is a tendency for impurities to increase their concentration in the electrolyte beyond the critical concentration. It is why an efficient system to recycle and purify the electrolyte must be installed, to reduce and restrain sludge by few impurities as possible in the electrolyte.
This is done mostly by filtering of the electrolyte and replacing of 0.1-0.5 m^3 cathode electrolyte with a fresh pure one [12].
As a result of exponentially grows of copper demand, alongside with the decrease of useful mineral in ores and respecting the world environmental policies, the electrolytic copper obtained from secondary materials gains more importance.

KEYWORDS: *electrolytic refining, copper, anodes.*

STRATEGIC DIRECTIONS REGARDING THE DURABLE DEVELOPMENT OF CAVNIC AREA AFTER THE TERMINATION OF MINING ACTIVITY

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ABSTRACT: *The concept of durable development of the mining areas after the termination of the mining activities is a problem of major concern, due in principal to the implications induced by the mining sector in the depreciation of environmental factors which are influencing the population health. At the same time, such activity involves a poor orientation of the labour force in activities which are specific or complementary to the mining ones. In the last 20 years, the mining industry has been drastically reduced in Romania. Nowadays, whilst the minimal resources are focused on the activity of coal extraction and processing (in several mining centres), the extraction and exploitation of polymetallic ores has been almost totally reduced.*

For the majority of the mining centers, the reorganization of the mining industry has produced the following effects:

- *economic disorders - mining and its related activities were the only activities carried out in the area;*
- *social disorders due to the jobs' liquidation and difficulties appeared in the reintegration of the outplaced personell in other types of activity;*
- *ecological impact due to the high costs induced by the mining activity termination and rebuilding of ecological aspects;*

Maramureş mining area was an important pole in the extraction and exploitation of the non-ferrous polymetallic ores. Therefore, the sudden and definitive termination of the mining activity three years ago has created serious problems regarding the environment's protection along with a strong social impact upon the mining communities, especially upon the weakly polarized centers, settled in order to serve the mining industry.

Cavnic town, one of the exploitation centre of polymetallic ores, settled in Maramureş mining area is one of the mining community in which the lapse of the mining industry has produced remarkable disorders, both on economic and social level. Also, the environmental protection can be encountered to be in decline.

The mining activity carried out in Cavnic town consisted in the geological research, opening, drift stoping, exploitation and processing of the polymetallic ores in order to produce lead, zinc, copper, gold and silver. Therefore, the exploitation activity has been carried out in two mines: Bolduț mine – where from sulphuric ores of copper, lead, zinc and silver were extracted and Roata mine - where from sulphuric ores of lead and zinc were extracted. The ores processing extracted from those two mines has been carried out separately: the ores coming from Bolduț mine have been processed at the Central Flotation from Baia Mare, whilst the ores coming from Roata mine have been processed at UP Cavnic.

Nowadays, when speaking about mining in Cavnic town, we can encounter only several buildings which are in a continuous decay, the downgrade entrances, the sterile dumping site and the draining settler.

Similar to the majority of the affected areas, the processes regarding the ecologic and social economical rebuilding are at a starting point. There are certain preoccupations for the shutting down and preservation of the mining areas, most of them focused on projects. Unfortunately, such preoccupations are not materialized in clear, long term development directions for this area.

The proposals made by officials are considering the following aspects: shut down and preservation of the mining area by taking into account security measures as well as measures meant to ensure the environment's protection; exploitation of the mountain touristic potential; support provided for small and medium enterprises.

The first step was already taken in 2002 when the development of the town was set on its touristic potential. Therefore the ski slope was opened in La Icoana area. Nowadays, in Cavnic there are 8 km of ski slope and 2,93 km cable transport means are in service for the slope (teleski). Cavnic was included in the National Program named "Superski in the Carpathian Mountains" with appreciable perspectives of being classified as a touristic resort.

KEY WORDS: *durable development, mining strategy, ecologic reconstruction, touristic potential.*

STUDIES REGARDING OPERATION BEHAVIOR OF ROAD PAVEMENTS BASED ON NUMERICAL MODELING

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ABSTRACT: *Cooperation between layers represents one of the current issues regarding road pavements analysis on their operational behavior by traffic loads. The bond between road layers, by most of calculation methods, including the Romanian ones, is considered perfect. It is hard to say how true this statement is, but it is expected the fact that it is unlikely for this bond to be "perfect" for the entire service life of the road pavement.*
A road pavement is calculated depending on a certain number of parameters (traffic, bearing capacity of foundation soil, the characteristics of materials in road pavement composition etc.) so that each road layer will only be loaded on its own level of bearing capacity. Specific stresses and strains are transmitted in different layers depending on the characteristics of component materials and the bond between them.
The paper aims to examine the hypothesis of the bounding between road layers on numerical modeling with ABAQUS 6.8-3, a commercial modeling program, based on finite element method that was widely applied in road pavements analysis. Thus, two road complexes were studied (flexible road pavement, mixed road pavement) and resulted states of strains in different analysis hypothesis.

KEY WORDS: *layer, settlement, numerical modeling, road pavement*

SOME ASPECTS ON USING REMOTE SENSING AND GLOBAL POSITIONING SYSTEMS GNSS IN GEODESY AND GEOLOGY

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ABSTRACT: *In this article we present some aspects of using remote sensing and Global Positioning Systems in Geodesy and Geology GNSS type. With a high degree of generality, remote sensing is defined as a technology that allows obtaining information about objects and phenomena without coming into direct contact with them. At present, often associated with remote sensing digital images taken from sensors placed on satellites and then processed by electronic computer. The new generation of satellites equipped with sensors, high precision will open new fields of application of remote sensing.*
Geodesy is concerned with determining the shape, size and the Earth's gravitational field, characteristics that evolve over time, our planet is not a body. With the development of space technology, surveying began to use artificial satellites to study Earth's shape, internal structure movement of rotation and gravitational field. geodetic satellites are used in two ways: as high marks visible from very distant regions of hundreds or thousands of km from land surveying, where the Earth's curvature prevents the formation of triangles with largest side 50 km, as balls evolved in Earth's gravity field, their motion is subject to various disturbances, such data are obtained on the shape and internal structure of the Earth, gravitational forces and other changes.
Research using satellite technology crust concerns some geological problems: petrography and structure of the formations that make up Earth's crust; useful mineral deposits, land cover dynamics, geological mapping. The study of rocks and geological structures based on analysis of spectral characteristics of minerals and rocks. The clearest observations on the nature and structure of geological formations have been obtained and are obtained for regions where the climate severely limit the development of vegetation, such as desert or arctic regions. have made outstanding research results in studying the spatial dynamics of land cover, were recorded from space earthquakes, volcanic eruptions, tidal land movements or crustal plates.

KEYWORDS*: Remote Sensing, GNSS, Geodesy, Geology, Landsat, Spot, Geodetic satellites, NAVSTAR-GPS*

MONITORING OF MINING SUBSIDENCE IN QUASI-STATIC / QUASI-DYNAMIC AND DYNAMIC METHODS

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ABSTRACT: *The use of Quasi-static / Quasi-dynamic and dynamic Methods in structural health monitoring has rapidly accelerated in recent years. By embedding sensors, with sequential or continuous data transmission, in structures (e.g. buildings, bridges, pipelines, dams, surface mining structures or land above the underground mine goals) it is possible to obtain real time data on structural changes such as stress, strain, subsidence and landslides.*
The structural monitoring system using Quasi-static / Quasi-dynamic and dynamic Methods particularly is adapted for mining subsidence to precise short and long-term monitoring of deformations and other parameter.
Along the GPS systems start-ups and of the topographic-geodetic data GIS based, the new methods and tools for monitoring the behavior of structures has revolutionized the Surveying Engineering Technology.
Depending on the type and condition of structure, structural monitoring systems may need to be capable of measuring both long-term movement trends and short-term loading deformations. Long-term measurements are far more common and somewhat more complex given their external nature. The new Quasi-static / Quasi-dynamic and dynamic Methods are the structure of Surveying Engineering has changed, namely has been completed.
The paper outlines the main features of the system and the measurement method's results, particularly in mining areas.The paper shows a possible structure of the new Surveying chapter on monitoring in dynamic system.

KEYWORDS: *Quasi-static Quasi-dynamic dynamic Methods, Mining subsidence*

MANAGEMENT OF SUBSIDENCE PREDICTION AND IMPACTS

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ABSTRACT: *Like many other disciplines involving mining activity, uncertainties are an inherent part of subsidence engineering and management. Management of subsidence must be flexible and capable of dealing with unexpected changes or uncertainties.*
In recent years, significant progress has been made towards achieving a better understanding of subsidence development related to the natural environment. This has led to improvements in the accuracy of mine subsidence impact predictions. Land reclamation is a complex and systematic project which need perfect plan and correct procedures step by step.
The subsidence management policy and approvals process requires mining operators to provide a Subsidence Management Plan (SMP)(www.dpi.nsw.gov.au) which must include:
• a full description of the area proposed to be impacted by mining activity, including areas of environmental, heritage or archaeological sensitivity;
• predictions of the expected extent of subsidence;
• an assessment of the economic and social benefits and impacts of the proposed mine development;
• a description of subsidence projections and actual impacts associated with any previous activities;
• details of proposals for ongoing community consultation.
This paper analyses the opportunity and usefulness of building Subsidence Management Plan systems in the case of subsidence, sketching its configuration, the composing informational levels, the methods of management. The SMP must be of a level of detail appropriate to the sensitivity of surface features, and the magnitude, extent and nature of the anticipated.

KEYWORDS: *Land Reclamation; Ecological Restoration; Environment Management, Subsidence, Management*

MINING SURVEYING AS A BASIS FOR GIS APPLICATIONS IN MONITORING THE MINING ACTIVITY

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ABSTRACT: *This paper analyses the opportunity and usefulness of building GIS systems in the case of mining exploitations, sketching its configuration, the composing informational levels, the methods of management, updating and access of this very up-to-the-minute information management technique in a unitary system and present the conjuncture in which a GIS type informational system is desired to be implemented, the difficulties, the strengths and weaknesses.*
Analyzing the informational levels that MINING SURVEYING offers, we can see that practically, starting from the support layer, which would be the general plan of the mine, for the underground, and the topographic site plan for the surface, all the information is geographically labeled, so that everything mentioned below corresponds to the same condition. Geographic Information Systems (GIS) is becoming powerful in many applications work for solving problems. New technologies open up a world for spatial model integrated on specialized software of GIS. This not only pre and post processes that GIS can be used to develop applications, but also the spatial modeling based in GIS covering in significant depth within application specific development can be employed.
This paper outlines the extremely important role of the general plan of the mine and of the horizon plans, graphical documents regarded as basic supports for a potential GIS system of the mine. All informational levels, beginning with geological data concerning the geometry and the position in the three-dimensional space of useful reserves, to the airways, electric networks, data concerning staff and ore movement, etc, can be build in a unique system, labelling topographically each information and putting that label in its informational level.

KEYWORDS: *GIS, Mining activity, Geologic data, Mining surveying*

CONSIDERATIONS ON THE POSSIBILITIES OF MONITORING THE STABILITY OF UNDERGROUND MINING WORKS BY TOPOGRAPHIC METHODS

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ABSTRACT: *The underground mine working that were the result of underground excavation methods of the useful minerals substances, may be considered an important means for preserving the environment and can be re-used successfully for different purposes, taking into consideration their dimensions, volume, and stability. Under the circumstances of including these underground mine working in the economical circuit, it is quite important to determine the stability that will be later used to establish different usages. This material presents several considerations towards the possible topographical methods used to determine the stability of underground mine working.*
In order to determine the stability of mining works (opening and preparing), especially the galleries, executed at different sizes and types of profiles, that can be applied accordingly to the characteristics of the local area, the equipments at disposal, taking into consideration a variety of methods, the most at hand being those that measure the convergence of the mining work's profile.

KEY WORDS: *topographical methods, underground mining, environment protection.*

QUERYING GRAPHICAL CADASTRAL DATABASES USING VISUAL LISP

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ABSTRACT: *LISP is, except Fortran language, the only high-level programming language that has survived from the 1960s until today, and Visual LISP as a subset of LISP language will continue to allow making routines that will improve the production in the office works in the field of surveying and cadastre.*
Visual LISP may be best described as a full development environment, aimed at creating applications using the LISP programming language. Visual LISP adds more productivity because is an application of Object ARX components and permits handling data from graphical databases. Visual LISP allows resolving specific issues, including querying data in in the field of graphic cadastral databases. This article presents a way of querying the data components from a graphical database, obtaining a report from the user queried selection that specifies the numbers and the names of founded blocks. It is also presented the code of this query, so all the interested users can make use of it.

KEYWORDS: *graphical cadastral database, Visual LISP*

THE OPTIMIZATION OF THE DECISION PROCESS IN ORDER TO A SUSTAINABLE DEVELOPMENT OF THE LOCALITIES USING G.I.S. INSTRUMENTS

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ABSTRACT: *In many life fields it appears more stringent the necessity that in a certain space, a certain region the analyze of some information should be linked to geographic environment. This group of duties needs to be performing spatially the information, which, due to the huge quantity of data to be managed is very great today without using the possibilities offered by the informatics. The result of this created the basis and contributed to the development of Geographical Information Systems – G.I.S.*
The G.I.S. instruments of visualizing and analyzing the geographical information constitute today a field with a spectaculars evolution. The special G.I.S. operations over the spatial information make from these instruments not only some efficacy instruments for making maps, but especially, irreplaceable instruments for analyzing the information that refer to the terrestrial surfaces. Also, the existent information can be reused, due to the fact that one of the main purposes of introducing the G.I.S. technology consists in creating – by conversion in digital form – some efficient possibilities of maintaining and updating the information. During the last quarter of century, the G.I.S. applications have been extended quickly into the following fields: natural resources, energy, transports, business, and public safety.

KEY WORDS: *Geographical Informatics Systems, spatial information, digital maps, spatial analyze*