



A Project Report On Exploration on the rocks

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The main objective of this paper is to review and study the methods of exploration in stone. The origin of the formation of rocks and rock fragments have been studied .Then the chemical structure of natural stone and its taxonomic description is based on the standard BS 812.The stone corruption and pollution of the salt solution is evaluated and tested at the end of conventional methods is presented in detail in the rocks, The most importance in determining optimal exploration method to cover the costs of exploration ,extraction ,production and processing. Now it is necessary to explain that, the stone industry has had a significant share in the global economy.

Key words: Exploration , rock , economy.

Introduction

Demand for mineral raw materials (metals, oil, coal and radioactive materials) with the current status and trends of global population has increased dramatically in the future. It is clear that to obtain the raw materials more expensive and more difficult every day is different. Mines visible on the surface or near the surface of the well known and have been found long ago. Present and future consumption Aktsha should be conducted in areas that had been covered with minerals and depths are greater . Important indirect methods require the use of geochemical and geophysical surveys, including magnetics, which are able to provide deep geologic information .Due to the formation of minerals (Zhlz) in its special geological structure formed in order to detect and explore ways they are different. Copper exploration, especially in the preliminary stages Rvsvbat stream is using geochemistry to exploration for iron ore in different areas, but the use of geophysical methods are more practical.

Geotechnical Science

Geotechnical knowledge of the dynamics of the geological environment and its function as mechanical engineers have the. Geotechnical engineering is a branch of civil engineering that aims to study the natural materials found in the upper layer of the earth. Generally, this includes application of the science of soil mechanics and rock mechanics, foundation design problems is Soil mechanics is a branch of engineering science that studies the physical properties of soil mass behavior under loads deals. Engineering foundation (foundation) is the application of scientific principles of soil mechanics problems.

Geological Science

Fields of geology, is a major university in trimming down state of the earth in space history, geology, shape and size of the Earth, the Earth's physical and chemical properties and ingredients to determine the factors that are involved in the formation and study and evaluated.

Ore Petrology

Petrology or lithology of geological trends and science is the study of rocks and earth structures more or less deals. . This study was limited to materials science There are shells that are available Although examples of simulation in the study of meteorites also provide. The knowledge of the different types of events that occurred from the beginning to the source rock will And geological processes and the history of the. Lithology of the main geological history and genesis of rocks and how they work and explore their shows. The study of rocks is possible in two ways, one by reading, and the other through the shell of the old evidence.

Identifying Rocks

In terms of geology, the rock of the Earth substances refers to one or more of the minerals found together, are true. In front of a mass of soil particles detached flakes or a loose connection that is formed by weathering of rocks and survived. However, drilling engineering and construction capabilities as an indicator of geological materials are classified into two groups used in rock and soil [1].

Formation source rocks and small rocks

Two orogenic processes and shaving in the mountains of stone products are created [2].

Mountains of Creation

Melt butter pressures within the solid crust of the earth, it is Orogenic processes can cause deforestation and land called.

Weathering agents or shaving Mount

Although each of the process that causes fragmentation And hard surface deformation of materials and substances that are in contact with the atmosphere, Weathering call. Erosion or weathering, physical and chemical factors are divided into two groups.

Chemical weathering

Hydration products, dissolution, hydrolysis, oxidation or reaction with the minerals in the rock is acidic waters [3].

Physical weathering

This phenomenon by factors such as frost, temperature changes in the atmosphere and the resulting expansion and contraction, gravity, growing plants, wind, water flow and act like animals and they formed And the finer grains are crushed rocks and their deformation [4].

Chemical structure of rocks

Rocks are made of minerals called simpler parts. Solid minerals, natural, often crystalline, inorganic, homogeneous chemical compounds have been identified. So far, more than 3,000 known minerals in nature that only about 24 minerals are abundant in the earth's crust, rocks and minerals, stone called them [5].

Chemical classification of rocks

The rock-forming minerals are varied, depending on the amount of chemical compounds in which there are some rocks are divided into four categories:

- Carbonates
- Sulfates
- Oxides
- Silicates

Stones

The stones are natural objects that are made up of one or more minerals. Rocks on Earth are divided into three categories:

- 1 - Igneous rocks: rocks is called the solidification of magma or cooling of a fluid to be heated.
- 2 - sedimentary rocks: These rocks deposited materials from all parts of the land, such as mountains, are derived from.
- 3 - metamorphic rocks: igneous or sedimentary rocks affected if one or more operating pressure, temperature and heat of solution, they become metamorphic rocks.

Note that About 75 percent of the rocks in the crust and sedimentary rocks and igneous and metamorphic rocks (25%) comprise the rest. However, the depth is greater than the percentage in favor of the igneous rocks change.

Natural stones are classified according to the BS812

Basalt Group: andesite, basalt, Prfyrthay alkaline, dolomite, Apydyvryt, Lamprvfyfyr, quartz - Dvlvyt and Split

Flint Group: Chert, Flint

Gabbro groups: alkaline diorite, gneiss alkaline gabbro, Long Horn, neurtis, peridotite, and Srpantynt Pykryt

Granite Group: gneiss, granite, granodiorite, Pgnatyt, quartz - diorite and syenite

Department of igneous rocks and sand: Rkvz, Gryvyk, sandstone and tuff

Horn Group Means: All non-metamorphic rocks of the Marble

Department of limestone: dolomite, limestone and marble

Group schists: phyllite, schist and Slate

Group Prvfyry: Plyt, dacite, Flsyty, granophyric, Gratvfyr, micro-granite, Prvfyry, quartz - Prvfyryt, rhyolite and Trashyt

Quartzite Group: Ganystyr, quartzite, sandstone and quartzite of the crystal again

Corruption in stone

Corruption is a major factor in the rocks of soluble salts on them. Environmental pollution, frost and corrosion in metal parts and weak veins and poor operation also destroys the rocks.

Effect of soluble salts

If the moisture to evaporate with soluble salts from the rock surface Some salt on the surface of the porous layer of rock salt and leaves. Keep away from moisture - evaporation, thereby increasing the size of crystals and stones are scaling level. The stones that are more porous, more sensitive to soluble salts [9].

Environmental Pollution

Stones contain calcium carbonate minerals are particularly sensitive to acidic environments. Sulfur dioxide and oxygen in the air to produce sulfuric acid as a moist environment Impact on limestone and calcium sulfate is produced. Limestone and calcareous sandstone are more susceptible to this.

In the case of limestone, calcium sulfate from the surface to be washed away by water. But are washable surfaces, Surface of the carbon black And hard shells, and bumps into the The lime dust around it. The magnesium-bearing calcareous stones, creating magnesium corruption will accelerate the process.

Pores in the sandstone by gypsum (calcium sulfate) are high, Hard shells made mostly due to differences in thermal expansion fall. Although silicified sandstone directly attacked by acids do not harm the air

However, limestone, gypsum produced by the breakdown in the Due to evaporation from the surface crystallization occurs.

Marble is basically calcium carbonate is attacked by acids in the air Over time it gets rough and polished surface. However, due to the dense texture and density function of crystallization is less affected [10].

Of glacial

Damage caused by frost in parts of the building such as the cap, shades, window seat and floor the most affected. Sandstone, limestone and dolomite are generally more susceptible to invasion are caused by frost. Marble, granite and sheets of ice are not affected due to low porosity [11].

Corrosion of metals

Rain water from the surface of the limestone out of copper and its alloys are causing green spots. The corrosion of iron and steel are very hard to clean surfaces of porous rocks. Most damage caused by the expansion of rusting iron and steel parts within masonry walls occurs. To this end, all stainless steel parts used in the installation must be stone facade [12].

Fire

Stone's work is rarely fire damaging overall. But the look of granite, marble and sandstone might Fire on a black or be crushed. Calcareous rocks generally are not affected by the fire, just rocks with bright color due to oxidation of the iron in them are always pink [13].

In the present study, several methods have been explored Drsng

Geophysical methods

Today, the use of geophysical methods in mineral exploration and selection is a common place for exploration. Methods of geophysical methods are expensive Two stages of mineral exploration, geophysical methods can be used. The first step is to track or the early exploration In this step, we scale the data of airborne geophysics and a small area where a large area has been removed, can be used to detect abnormalities.

Mineral another step methods in the preliminary phase, the semi-detailed and detailed exploration. At this stage we geophysical data to determine the exact location of hidden reserves, shape, and depth of use. Also, based on geophysical data combined with geological information can be finally determined appropriate locations for the drilling of the ore reserve estimate.

Geophysical methods that can be used for mineral exploration methods for measuring magnetism, gravity surveys, radiometric electrical and electromagnetic methods cited. Seismic methods are used more for oil and gas exploration.

Select the method or methods for determining the location of a mineral with natural minerals contained in the ore and surrounding rocks depends. Sometimes it may be a direct indication of the presence of minerals intended to provide. Magnetic measurement method for magnetic minerals such as iron Such as magnetite, hematite, etc. Sometimes it may just be a sign of a condition suitable for the desired mineral is Such as magnetic methods for oil exploration Often as a means of identification used in determining the depth of basement rocks Enables to determine where deposits are thick enough to ensure that oil exploration.

Gauge Magnetic Materials

Creator in order to protect the earth against solar charged particles in a relatively low magnetic field around the earth is created. This field is derived from the rocks of the Earth's crust Earth's metallic core and induces a secondary field. Sign secondary field that is proportional to the intensity of the magnetic properties of rocks, in recent centuries has formed the basis of the measured magnetic exploration. Magnetic recording device (Mgntvmtr) at any point in the field of land records. The intensity is proportional to the magnetic properties of rocks related to the grade magnetite mineralization associated finds. Magnetite-bearing rocks of the Earth's surface over time due to various factors affected by alteration and weathering And almost loses its magnetic properties. The survey measured the magnetic magnetite ore in the deeper areas are safe.

The design and interpretation of magnetic data, it's time to process the data. In order to perform all stages of data processing, geophysical data analysis stage is preparing to dispose of. Includes all necessary data for the preparation of magnetic anomaly profiles and maps of magnetic and geological interpretation.

What is the intensity of the magnetic field is measured. The total sum of the magnetic field intensity magnetic core of the Earth, the Earth's magnetic field and the external magnetic field of the earth crust is flexible stones. What is important is the intensity of the magnetic field due to magnetic anomalies of magnetic susceptibility of rocks is called the crust. To achieve this goal has taken on a series of corrections shall coordinate with such data, daily changes, corrections and other applied fields. Product data, profiles and contour maps that show variations of intensity anomalies.

After data processing Contour maps of magnetic anomalies and to provide And presentation of new data and a more accurate interpretation of geological, magnetic data using the methods and tools of mathematical transformations can be qualitatively analyzed. However, this approach often leads to determine the exact source distribution anomalies are not observed. But they can certainly help in identifying general sources. For better interpretation of data taken And by the interpretations of the existing anomalies, typical Aztbdylat Zhyvmghnatys like converting the polarity inversion, horizontal and vertical first and second derivative and upward continuation analytic signal is used.

Exploratory drilling

Interpretation maps resulted in the separation of positive and negative Mgntvmtry methods based on models derived from magnetic harvesting is done And to approve or reject anomalies obtained from

these methods After Zyvfyzyk maps of the geology, drilling several exploratory boreholes are expected. Since the origin of this anomaly is Habyn poles So we try to be the primary location of boreholes between positive and negative poles are designed not on the positive pole (Fig. 1)

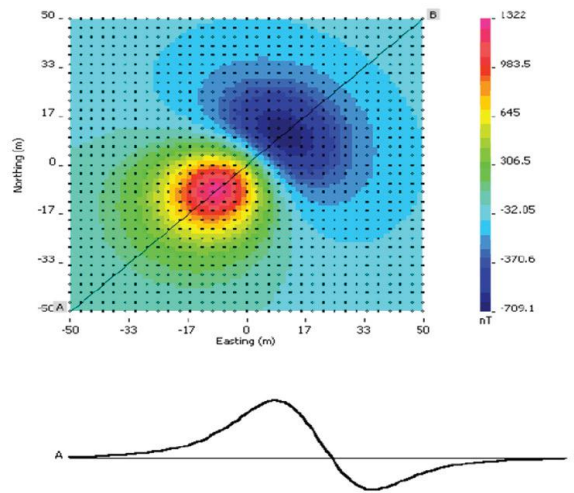


Figure 1

Figure 1: B + (red) and negative (blue) map obtained by the method of initial exploratory wells were drilled Mgntvmtry the geological logs, geologic cross sections can be drawn from these results and to determine the exact further drilling of mineralization and the results of exploration drilling, geological sections of mathematical functions and helpful and we determined the exact location of future drilling. One of the most GET Function mathematical functions used in this function is the linear combination of some non-linear function of three variables: 1 - Grade 2 - Error estimate 3 - Thickness is a mineral. The maps obtained The method further drilling locations that have higher priority in terms of getting the information they are given.

Descriptive Petrography

Studies rocks: igneous, metamorphic and sedimentary, preparation and preparation of histological sections, the texture, Mineralogy and paragenesis of their names. Descriptive part of the lithology lithology Which refers to the composition, properties and classification of rocks is discussed. Depending on the desired accuracy in the description of the lithology of the naked eye or a hand MAX Bazrh, microscopy, chemical analysis, X-ray Dyfraksyvn ... Is applied.

Descriptive Petrology

Igneous and metamorphic units in this section shall be by field of study and sampling. The texture and composition of samples of Mineralogy, mineral chemistry, and whole rock geochemistry, isotopic geochemistry studies are. Using data from laboratory and field situations metamorphism and magmatism of temperature, pressure, oxygen fugacity, and water is determined. Determine the type and degree of metamorphism of pelitic metamorphic rocks are also studied. Using the above

information is ultimately magmatic origin (igneous rocks) and the original protolith (metamorphic rocks) and its tectonic setting and petrogenesis is presented.

Magmatism relationship Vkanzyay

This part of parity between Field and Laboratory Study of Igneous rocks and mineralization is Finally, the models for mineral exploration is the exploration geologists.

Of the semi-active volcanic activity

In this section, semi-active volcanoes such as Damavand, Sabalan The mineral waters, gases and molten material are examined, possibly leaving Using geophysical and geochemical methods and risk analysis and promulgated Faylt again.

Formation and movement of continents

German meteorologist Alfred Wegener in 1912 and Zhyvfyzykdan awareness and understanding speech with a book titled "The Origin of Continents and Oceans" continental drift theory raised for the first time seriously. He believed that based on the evidence gathered for their Homogeneous mass of continents in the past and have been linked to Today, on the southern continent of Antarctica at the time and continent in northern latitudes have been. Wegener's continental collection Panzhha Means "land" and called it Pantalasa contain named oceans.

The super continent about 200 million years ago, early in the second period was broken several areas And fragments, then slowly but constantly are scattered on the surface of the Earth.

Alexander Dvtva geologist South Africa in 1937, the book "Continental stranded us" theory, splitting the continent into new species made based on the first two Abrqarh original names Lvrasya in the north and Gondwanaland in the south there are between them they have over the ocean called Tethys. Supercontinents holder of northern North America, Greenland, Europe, Asia and South Abrqarh including South America, Antarctica, Africa, Madagascar, India and Australia.

Mountain belt

The main belt of mountain chains thousands of kilometers long, stretching from the mountain ranges are formed. Usually a range of mountains near and parallel to each other to form The major part of the deformation of the crust and large igneous activity are created. The most obvious manifestation of orogenic belts, Alpine orogenic belts - the Himalayas. The belt is composed of several mountain ranges And the young orogenic belt is considered. The Ural Mountains, the Appalachian Mountains are outdated and Scandinavia.

Dewey & Bird In 1971 the following specifications for the Mountains title:

1 - mountain ranges of linear forms, and arcs are drawn.

2 - are complex mountain ranges have formed within And thrust it up and move rocks together are very different, as their primary connection is lost.

3 - shortening layers of shells are found on mountain.

4 - asymmetric pattern of deformation and metamorphism are mountain ranges.

5 - Most of the sedimentary rocks of orogenic belts and belt thickness direction are perpendicular.

6 - sedimentary rocks of marine origin in China often have wear mainly continental basement rocks beneath the mountains, but sometimes the ophiolitic rocks of the basement rocks are seen.

7 - sedimentary rocks were deposited in a very long time. While the deformation and metamorphism occurred in a relatively short time.