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Studies on Increasing the Efficiency of Drilling Wells in Mining Enterprises

Bayramova Minevvar Axmet qizi
Student of Nukus Mining Institute

Abstract: To date, information on the methods of determining the efficiency indicators of drilling processes in the mining enterprises of the Republic of Uzbekistan is provided. Based on the instructions for the technical parameters of the drilling tools in the formation of drilling wells, studies were carried out to evaluate the drilling efficiency index. This paper presents the results of a first attempt to justify rates of efficiency indicators in the well drilling process. For comprehensive evaluation of usability sources of energy in the production of similar or substitute work, we defined specific energy consumption (designed, planned, actual studies), which includes the direct consumption of all types of energy including primary and secondary production and unit production for operational needs from the volume of consumption of specified resources and energy supply. It is proposed to classify the electricity consumption rates according to its duration and measurement scale. The the composition and amount of energy consumption rates during well drilling are described. The norms of technological, expeditionary and group consumption of electricity for drilling wells during the design process research, technological works were identified.

Keywords: Well drilling, drilling efficiency, mechanical properties of rocks, drilling speed, technical parameters.

Introduction:

Currently, in most mining enterprises in the Republic of Uzbekistan, drilling processes - the drilling machine is the most widely used machine tool in the industry. Drilling operation is the most frequently performed operation in mining enterprises. The diameters of the wells are formed from the rotating edge of the tool, known as well drilling, which exerts a great force on the work. The machine applies vertical pressure to open wells, also known as "Well Forming". In the analysis of the methods of evaluation of the drilling tool, work was carried out using different methods. Methods based on periodic comparative tests were reviewed in detail. The technical level and operational efficiency of the drilling tool are determined by the resource (displacement of the tool), drilling speed, durability, power delivered to the bottom of the well. The correct choice of drilling parameters and drilling tool is ultimately determined by the indicators of economic evaluation. In the mining industry, tools for mechanical impact on rocks are used for drilling: drill bits and crowns can have different purposes, designs, materials and sizes. In addition, a tool drill of one purpose and size is distinguished by its quality and price, which depends on the level of technology. During our research, several methods of determining the efficiency index of drilling technology were considered. Various performance criteria are used to evaluate and select the more advanced or newer, and drill rig models are taken as an example. It is determined by the technical level and operational efficiency of the drilling tool, the resource

(tool drift), drilling speed, durability, power delivered to the bottom of the well are important. It is expressed by the ratio between economic efficiency and costs. The correctness of choosing a drilling tool is finally determined economically. The performance of drilling tools can be evaluated in different ways:

a) Depending on the parameters of special equipment according to the results of periodic (installation, acceptance, comparative) tests;

b) According to the data of the drilling log (technical efficiency, power load and the amount of consumed energy);

c) Accelerated tests (bench tests), technical diagnostics or expertise through loading of the drilling rig during technical work;

d) During the drilling processes, it is necessary to determine the materials of the tools by conducting laboratory studies of the physical and mechanical properties of the rocks.

Preparation: registration of initial data on the location, test date in the test report and drilling conditions and technical characteristics of the equipment complex, based on the initial technical parameters. Based on economic parameters to calculate direct costs for drilling a 1 m well. Registration: simultaneous registration of the axial movement of the column, recording of acoustic signals that occur during the operation of the pneumatic impact tool and during drilling of wells in the established drilling modes, they are recorded by monitoring devices . This is done on drilling rigs or autonomous measuring devices. Measurement and calculation: data processing of measurement equipment and determination of technical and technical-economic indicators obtained in the process of wells. Report and analytical: construction schemes for the assessment of energy efficiency of drilling wells, creation of report documents with recommendations for selection and adjustment of a specific model of a pneumatic impact tool, reasonable parameters of drilling and well cleaning providing recommendations. Under such conditions, it is easy for the well to collapse and other accidents. In continuous improvement is necessary to further improve the safety of drilling construction application and practice of well control technology. The purpose of applying well control technology to reduce as much as possible the unexpected situation during the operation and reduce losses it is caused by negative factors. Therefore, the main work is pressure balance. In actual operation, it must be ensured that the actual formation pressure is less than the bottom hole pressure. As for the current state of technology development, the mastery of well control technology mainly includes drill pipe, well kill, cementing plug and other types of work. Because the operation process is relatively complicated, the difficulty in the actual operation process relatively high, and the professional ability of professional construction workers is also relatively high. There are many types of well control technology design operations, so the number of equipment used is also very large and the difficulty is relatively large. It is mainly layer pressure, packing and other related objects. The actual performance of all practical equipment will be direct affect drilling performance. In addition, it is closely related to the safety of operators. In general, well control is divided into three levels. First, the control of the first-order well is basically control formation pressure balance through well pressure to prevent gradual formation fluid infiltration into the well; The second is the secondary control of the well, which basically means that layer the pressure cannot be controlled by the well pressure and the well pressure cannot be well balanced. When if the formation fluid enters the well, a blowout or overflow occurs. An explosion at this time preventive equipment should be shut down in time and appropriate measures should be taken actively balancing the well pressure, achieving primary control of the well; The last three levels of well management, basically refers to an explosive accident and we can't control now, we have to use appropriate equipment and appropriate technology to minimize damage caused by an accident effective control of the accident to prevent the gradual expansion of the hazard.

Materials and methods

Performance indicator of drilling processes, periodic tests are the most reliable, but time-consuming method. Drilling parameters are given in the instruction manual and certificate, information about the operation process and results of the drilling tool, full information about the restrictions on the features recorded. The results of tool development are not comparable. Accelerated testing provides reliable data quickly with minimal effort, but requires testing equipment and personnel, and generally incurs wasteful costs. It is proposed to process the quantitative test results of drilling efficiency indicators in mining enterprises according to the method. With the exception of obvious deviations in this drill string, the angle of inclination of random drilling is taken into account with the degree of accuracy necessary to obtain reliable data. For this, diagrams are drawn according to experimental data. The abscissa of the slope angle is taken as the resistance of the diagram in meters, and the ordinate is the strength of the rock; accordingly, the durability of each type of drill press during each specific test. The coefficients of the equation are determined. Experimental data is the main predictor for determining the flow rate of drilling tools. Based on these studies, it is proposed to identify cost savings for the acquired drilling tools and ways to improve drilling efficiency. The methodology proposed by the authors in this article is based on the main principle of recommendations for the selection of objects, location, test conditions and procedures, measurement methods, criteria for evaluating results, and an effective drilling tool. Conditions that provide objectivity and accuracy in the evaluation of drilling processes performance and efficiency. Equipment and tools of the tested drilling tool to objectively determine the best technical examples of drilling, improve production efficiency and drill provides a reduction in connection costs. The peculiarity of the technique is that it is proposed to test drills during drilling. Test results of samples of drilling tools under the same conditions for the reporting period are recorded in the register of performance indicators of drilling equipment and tools. The comparison of the efficiency of the drilling tool is carried out on a number of indicators: the average mechanical drilling speed, the standard deviation taking into account the average drift, the average durability and the price of the drilling unit (drilling tool) was taken into account. The efficiency of wells depends on many factors, the main one of which is drilling the ability of rock to drill rock and fracture - the property of deformation under impact instrument. Technological parameters of rock drilling rigs. is selected accordingly. Mining is the process of preparing ore for extraction by altering the natural the state of the genus involves a directed process to ensure its effectiveness. Hard rock in the making for rock blasting, and rocks of moderate hardness are mechanically broken. mechanical grinding blast crushing method is more useful due to its high productivity, low cost and low cost practical safety is high. In mining enterprises, until recently, open pits were mostly filled straight shafts. In blasting processes in such a structure, there is a large layer on top of the rock detonators charged mass. Detonator stage during blasting with excessive crushing of mined rock near the charge problems were observed. In this case, when the charge explosion occurs, there is a very large volume next produces fine crushed rocks. Such unevenness of the open pit after the explosion, rocks causes problems when working with them. Explosion pressure density of detonators in the mine this significantly reduces the processes of excessive decomposition of the surrounding rocks Due to the excessive crushing of the charge and the rock, the blasting time actively affects the mine rock. Expanded, lower and higher charge bursts of voltage waves mixing of parts is observed. In this case, the air gap acts as the beginning of the explosion and a a compensator that reduces the pressure generated in the charging chamber due to such a change indicators of the decrease of the explosive impulse in the extreme part of the surrounding rocks, i.e. the energy released in the explosion has the same effect on the ore mass of the mine. This is the conclusion it is based on experiments conducted in various mine-geological conditions. Well, when the detonator charges explode, the air is split into a gap, resulting in a voltage cut the waves created by the top and bottom of the charge, the mining area in the array, the drilling level can be good and uniform. In this case, the blasting area in mining enterprises by the drilling area before starting the unit and the border of the blasting area is prepared afterwards. calculations are

made, detonator charging operations and detonation area boundaries are then ordered charging sequence is performed. An engineer-technical worker carries out blasting works explosion limit area in mines.

Conclusion

In the process of drilling a deep well, we must pay attention to the application of well control technology, strictly doing well in well control design, strengthening, strengthening the work related to well control equipment good control of technology training and management system, continuous improvement of safety and efficiency of deep well drilling construction, ensuring safe and smooth drilling operations and good lay-up is the basis for creating more economic benefits. The choice of well control and kill method is a critical factor in success or failure monitoring and killing boreholes. When determining a kill plan for various influencing factors, we also need to optimize well control and kill methods according to the above principles consider appropriate support measures. At the same time, we need to follow some basic things based on the principles of priority selection, that is, safety priority, we should also consider principles of bottom atmospheric pressure method, drilling method, reverse rotation method and drill prevention principle of driller priority, reverse rotation priority and smoothness prevention explosion is basically in accordance with the principle of priority of security law. Security Priority: ie. the safety of well kill methods should be compared and considered before the principle of timeliness; efficiency and affordability. In conclusion, we can say that drilling tools should be selected taking into account the technical parameters of the mine and the physical-mechanical properties of the rocks. If drilling tools are selected correctly in mining enterprises, productivity will increase and the economic condition of the mine will increase. Based on the results of the research on determining the efficiency indicators of drilling tools, it is necessary to eliminate the cases of breakage of drill bits in several layers and ensure that no excessive load is applied to the drill at the boundary of each layer. We came to the conclusion that the drilling tools will serve the mine for a long time.

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