

Evaluation of Hard Rocks Destruction Effectiveness at Drilling

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Abstract : Well drilling in hard rocks is coupled with high energy demands which negates the speed of the process and thus reduces overall effectiveness. Aim of this project is to develop the technique of experimental research, which would allow to select optimal washing fluid composition while adding special hardness reducing detergent reagents. Based on the analysis of existing references and conducted experiments, technique dealing with quantitative evaluation of washing fluid weakening influence on drilled rocks was developed, which considers laboratory determination of three mud properties (density, surface tension, specific electrical resistance) and three rock properties (ultimate stress, dynamic strength, micro-hardness). Developed technique can be used in the well drilling technologies and particularly while creating new compositions of drilling muds for increased destruction effectiveness of hard rocks. It can be concluded that given technique introduces coefficient of hard rocks destruction effectiveness that allows quantitative evaluation of different drilling muds on the drilling process to be taken. Correct choice of drilling mud composition with hardness reducing detergent reagents will increase drilling penetration rate and drill meterage per bit.

Keywords : detergent reagents, drilling mud, drilling process stimulation, hard rocks

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