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Application of Pre-Bitum Oil Fraction in Drilling Works

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Abstract:

The results of the research will help to make drilling processes more efficient and economically profitable. At the same time, new possibilities of use of oil fractions have been identified, and they will be directed to their wider use in the drilling industry.

Keywords: oil and gas industry, drilling, high sulfur oil, surfactants, corrosion, inhibitor.

INTRODUCTION

The demand for new types of products from the processing of oil and gas products in the world is increasing year by year. One of the main urgent issues in obtaining these new types of products is the production of export-oriented materials that are aimed at reducing their impact on the environment and environmental damage, and can be used as a basis for import substitution. It is important to obtain inhibitors that protect the new types of metals from corrosion, increase the efficiency of their use, and develop modern technologies in the chemical and oil and gas industries.

The existing oil and gas industry in our republic is currently carrying out large-scale drilling operations. Today's drilling operations are aimed at finding oil and gas deposits at depths of 3,000 and 4,000 meters underground. Therefore, the surfactants used in drilling operations must meet their technical requirements.

LITERATURE ANALYSIS AND METHODOLOGY

In particular, the degree of foaming of surfactants, foam stability time, and foam thickness are considered to be the main characteristics [1;2]. Experimental tests were carried out in laboratory conditions on drilling fluids based on the proposed organic sulfur compounds concentrate (OOBC) extracted from the pre-bitumen fraction of high-sulfur oil.

The product, which is based on a concentrate of organic sulfur compounds obtained from high-end petroleum products, which are considered local raw materials, can be used as a new type of highly effective surfactant. The surfactant produced on the basis of OOBK meets the requirements imposed on other standard surfactants of this type and significantly reduces the cost of surfactants purchased from abroad. Also, the use of this surfactant in drilling operations has a significant positive effect on extending the service life of equipment used in the processes of oil and gas exploration and testing, as well as the service life of metal construction materials [3; 4].

RESULTS

Based on the results of the study, samples of OOBK were added to the initial drilling fluids and the density of the drilling fluid was measured with a special hydrometer.

Composition of organic sulfur concentrates and drilling fluids Table -1

	Drilling fluid composition, %	Technological parameters				
		density g/sm^3	The fusion of the sec.	Water output cm3 /30 min	Top layer mm.	pH
1	Initial solution: 1 liter of drilling fluid: 850 ml of water + 3 g of NaOH + 3 g of Na2C03 + 6 g of KMS (Namangan), + 100 g of clay (Bentonite) PBG brand	1,07	33	6	0,4	10
2	Initial drilling fluid + 5% OOBK	0,85	80	6	0,4	11
3	Initial solution: 1 liter of drilling fluid: 850 ml of water + 3 g of NaOH + 3 g of Na2C03 + + 6 g of KMS (Namangan), + 100 g of clay (Bentonite) PBMB brand	1,09	36	6	0,4	10
4	Initial drilling fluid + 5% OOBK	0,89	53	6	0,4	11
5	In the initial drilling solution: 1000 ml of water + 3 g NaOH + 3 g Na2C03 + 6 g KMS (Namangan) + 10 g graphite + 5 g Poly-Pac-uz (without bentonite)	1,01	35	5	-	11
6	Initial drilling fluid + 5% OOBK	0,96	60	5	-	11

The results of measuring the density of drilling fluids with different compositions are presented in Table 1 above. As can be seen from the data in the tables, the composition of the initial drilling fluid, i.e. 1 liter of drilling fluid: 850 ml of water + 3 g NaOH + 3 g Na2C03 + 6 g KMS (Namangan), + 100 g. clay (Bentonite) PBG brand drilling fluids were added to OOBK samples. When comparing the results of the study, it was found that the density of the initial drilling fluid was practically not changed by the addition of OOBK samples. Also, the OOBK produced by us was tested in drilling fluids without bentonite as a surfactant. The results of the experiment conducted with the composition of the initial drilling fluid: 1000 ml of water + 3 g NaOH + 3 g Na2C03 + 6 g KMS (Namangan), + 10 g graphite + 5 g Poly-Pac-uz (without bentonite) and the addition of a 5% solution of OOBK to this solution show that the density of the initial drilling fluid without bentonite is ρ=1.01 g/cm3, while the density of the solution after adding 5% OOBK to this solution is ρ=0.96 g/cm3. It was also found that the viscosity of the initial drilling fluid without bentonite is 35, while the viscosity of the solution after adding 5% OOBK is 60.

DISCUSSION

It is known that when drilling to depths of 3000 and 4000 meters, the viscosity of the drilling fluids decreases as they penetrate deeper. Therefore, one of the main technological characteristics of the fluids used in these drilling operations is the viscosity of the fluid. According to this technological characteristic, when comparing the values of the initial drilling fluid without bentonite with the values of the 5% OOBK solution added to this fluid, it was found that the viscosity of the drilling fluid changed from 35 to 60. When comparing the remaining indicators with the indicators of the initial drilling fluids, it was found that they corresponded.

The obtained samples were submitted to the laboratory of the "Oil and Gas Well Testing" Association of the Kashkadarya region, Koson district, for practical application. Based on the test results, the OOBK reduced the specific gravity of the drilling fluid and recommended it for oil drilling practice in order to update the composition of the technological characteristics of drilling fluids and use them in drilling operations.

CONCLUSION

The use of pre-bitumen fractions of oil in drilling operations is economically beneficial and technically efficient. It is recommended that further studies be conducted to further explore the possibilities of more effective use of fractions.

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