

ANALYSIS OF SUITABLE DEFOAMER FOR DRILLING FLUID- REVIEW

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ABSTRACT

Oil and gas industries have been facing various difficulties in oil and gas well drilling along with the use of various drilling fluids as they can harm to the environment and safety parameters. Various ecofriendly defoamer and non-biodegradable additives can be used for controlling such properties of drilling fluid. Foams in drilling fluids are not necessary except in intended foam drilling systems. Foam affects adversely not only to the parameter of fluids, specifically its density, but also to the mud pumps of circulating systems. Thus, there is a requirement for analysis of additive of drilling fluid as an alternate to minimize the amount of waste disposed that is non-biodegradable to the environment. This paper indicates the potential of analysis of suitable defoamer for drilling fluid, also evaluation of their efficiency.

Keyword: - Defoamer, ecofriendly, Drilling Fluid.

1. INTRODUCTION

Drilling fluid is a complex framework that comprises of fluids, solids, and synthetic substances. The base of the fluid can be water, oil, or both. A few sorts of synthetic concoctions and polymers are added to the base fluid to meet the necessary properties of the penetrating fluid, for example, thickness, fluid misfortune control, and substance piece. (Gray et al. 1980; Okorie 2009)[3]. The significant jobs of drilling fluid are to give hydrostatic pressure to secure intrusion of wellbore by arrangement of formation fluids; sealing of permeable formation, cleaning, cooling and oil of bit while boring and other part; suspension and versatility of boring cuttings from subsurface to surface; guarantee well stability; permit appraisal of arrangement among other (Zakaria et al., 2012) [6]. So as to suit these reasons, various chemical additives are brought into the fluid in definition proportion for appropriate rheological properties combined with their similarity. Environmental contemplations prompted an expansion in utilizing water-based drilling fluid over oil-based drilling fluid because of the high poisonous quality of the last mentioned, particularly in naturally delicate areas. The majority of the regular additives substances fall under the classification of non-biodegradable materials and represent a few threats when discharged to the atmosphere. These added substances including yet not constrained to; potassium chloride, potassium sulfate, poly-amine, and fluid misfortune added substances, and so forth., have a general negative ecological effect (Amanullash 2007) [1] In this manner, there is an interest for new naturally agreeable added substances that can assist with controlling the drilling fluid properties and improve their effectiveness with the least effects on the environment. Today, there is an expansion in the worldwide worries for the insurance of the atmosphere from the hindering effect of concoction and non-biodegradable materials. These concerns drive the oil and gas industries toward boring fluid enhancement methods to create more secure and eco-friendly fluid formulations.

2. METHODS

Diesel based defoamer creates difficulties in the interpretation of log. Products which is a result after screening various chemicals are considered to be defoamer. The following products may give the better results in eliminating the foaming tendency and also it act as a suitable candidates for use in defoaming the drilling fluids if problems occurs during operations.

Inorganic salt and surfactants, Sulphonated Asphalt, when added to drilling fluid may generates heavy amount of foam and thereby cause operational difficulties. Additives which may be used to be evaluated as defoamer are as following: Dow corning antifoam, Tri Butyl Phosphate, Antifoam silicon base defoamer.

2.1 AS DEFOAMER

- ✦ In one way of evaluation, x% w/v sulfonated asphalt was mixed to tap water and stirred in mixer instrument for 15 to 20 minutes
- ✦ After that, the whole content (water + foam produced) were transferred to a measuring cylinder.
- ✦ Total volume was noted
- ✦ Mixed 300-600 PPM dose of the product in the mixture produced in mixer
- ✦ Total mixture volume was noted again
- ✦ Foam quality was calculated and reduction after add the product was also noted after 15-20 minutes

3. DISCUSSION

First two products can be considered to eliminate foam in a significant amount as a defoamer. These products may be highly effective even at lower amount also considered to be an effective defoamer.

4. CONCLUSIONS

Various additives can be used as defoamer for controlling the difficulties faced by foam in drilling operations. Also the chemicals has the potential to replace the existing defoamer both in terms of environment friendly and cost parameters.

5. REFERENCES

- [1]. Amanullash M (2007) Screening and evaluation of some environment-friendly mud additives to use in water-based drilling muds. Society of Petroleum Engineers.
- [2]. Composition and properties of oil well drilling fluids, by G.R. Gray and H.C.HC Darley
- [3]. Gray GR, Darley HCH, Rogers WF (1980) Composition and properties of oil well drilling fluids, 4th edition. Gulf Publishing, Houston, TX
- [4]. Manual of Oil Field Chemical Specifications
- [5]. Okorie MO (2009) Modification of drilling fluid PH with local additives (Ash of burnt palm head sponge BPHSP) and a rich potash mineral
- [6]. Zakaria et al., 2012 Zakaria M.F., Husein M., Hareland G.