UNIVERSITI TEKNOLOGI MARA

POTENTIAL OF BANANA PEELS AND SUGARCANE BAGASSE AS LOST CIRCULATION MATERIAL ADDITIVE IN DRILLING MUD APPLICATION

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ABSTRACT

Loss circulation occurs when drilling fluid known as mud, flows into fractures of formations and not able to recirculate in oil and gas well drilling process. This can be a serious problem in maintaining the structure of formations and pressure of the well during drilling activities. Loss of expensive mud could leads to a major financial problem in executing a drilling project. This is why loss circulation is one of the biggest problem that are need to be tackled during drilling. This leads to the focus of this paper on developing new lost circulation material in water-based mud and considering the environmental resulting issues. The objective of this paper are to conduct parametric study of banana peels and sugarcane bagasse as lost circulation material additive for drilling mud application and to investigate thermal stability of the formulated banana peels and sugarcane bagasse based lost circulation material additive for drilling mud. The performance of banana peel and sugarcane bagasse with different particle size and concentration are tested using Fann Viscometer and Low Pressure Low Temperature (LPLT). The performance of the banana peels in rheological properties and filtration properties studies are more efficient compared to the sugarcane bagasse and mud without LCM.

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

The growth of drilling activities and exploration have increased globally nowadays into various regions that rapidly involving oil and gas industry such as Caspian Sea, UK Atlantic, Brazil and West Africa. The technology has enhanced the economics of discovery and extracting these natural resources that will donate many benefits to human itself. It also poses a big challenge and involve high performance of drilling fluids for these new drilling theory (Bernier, 2003).

For drilling circulating system, a closed loop system has been used. These events involve a primarily of drilling fluid which is the transmission of drilling fluid from workhouse. As an analogy, drilling fluid roles like liquid that will force to heart and will circulate the system in human body. Figure 1.1 shows a circulatory mud system. In new drilling process, the use of drilling fluids is crucial part of rotary drilling mechanism. A suspension of clay particles in a liquid mixing phase is either oil based or water based that will produce emulsion defined as drilling fluid. These drilling fluid also acknowledged as drilling mud are normally used in drilling oil and natural gas wells that including the process exploration and production by using drilling rigs (Bernier, 2003). There are numerous types of drilling fluids that have been used these days depending on various factors such as geology of exploration, well stability and environment conditions. Types of