что позволит эффективно выносить выбуренный шлам на поверхность. Кроме того, для создания проектных значений бурового раствора потребуется меньшие концентрации эмульгатора, что позволит снизить стоимость бурения скважины.

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SIMULATION OF DRILLING PROCESS IN OIL & GAS

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Introduction

Simulation and process of drilling is the most useful tools for evaluating and testing strategy, and they contain analytically over the years by organizations with the intention of effort in adversity attentiveness and reaction. They are also excellent tools for guidance, for evaluating tools and measures, for decision making drills, for developing team work.

One of the most important aims of drilling process is the least drilling cost. The minimum cost for every drilling period depended upon the excursion time. Generally for any area where the trip time is not given, 1 hour for 1,000 ft is used in calculation of cost per foot of drilling [1].

Cost-per-foot as related to these variables can be determined by the equation [2].

$$\text{Cost per foot} = \frac{\text{Hourly Rig Cost (Trip Time + Drilling Time)} + \text{ Bit Cost}}{\text{Footage Drilled}}$$

The example below illustrates how this formula evaluates the performance of two different bits.

Rig Cost = \$400/hour Trip Time = 1 hr/1000 feet

$$Bit\#15 \text{ Cost/ft} = \frac{\$400/\text{hr} \times (7.5\text{hr} + 18.5\text{hr}) + \$950}{264 \text{ feet}} = \$42.99/\text{ft}$$

$$Bit\#16 \text{ Cost/ft} = \frac{\$400/\text{hr} \times (8.5\text{hr} + 76\text{hr}) + 3145}{963 \text{ feet}} = \$38.36/\text{ft}$$

The process concerned in drilling well can be best demonstrated by taking into account the succession of drilling as shown in Figure 1. The depths and diameters used in this example are typical of those found in the North Sea but can be found in other countries of the world. The process of drilling well will be considered below. For details [3].

Generally, stratigraphy is the science of describing the vertical and lateral interaction of rocks [4, 5, 6]. These relationships might be based on rock type, called litho stratigraphy, on period, as in chrono stratigraphy, on fossil substance called bio stratigraphy, or on magnetic properties, known as magneto stratigraphy. The types of stratigraphy are based on three basic ideologies - younger layers lie on top of older layers, layers are initially horizontal, and layers continue until they run into a barrier [5].

Modeling of drilling process is superior economic conclusion production consist of obtaining characteristics of rock feature in a structure to be drilled, specifying distinctiveness of at least one drilling rig system; and iteratively simulating the drilling of a well bore in the development. The method and system further produce a profitable assessment factor for each iteration of drilling simulation. Every Model of drilling process is a purpose of the rock line and the characteristics of the at least one the following selected from the group consisting of litho logy, rock strength, and shale plasticity, wherever a personal attribute is consequent from log data and a relevant litho logy model, rock strength model, and shale plasticity model, promote the log data contain at least one of the following group consisting of well logs, mud logs, core data, and bit records; identify personality of at least one drilling rig structure, in which the characteristics of the at least one drilling rig system consist of rig inputs wherein the rig contribution include at least one of the following selected group consisting of: operating constraints, rig expenditure, most weight on bit, top drive torque, table drive torque, top drive least RPM, table drive bare minimum RPM, Modeling of the drilling in the development and turn out an economic assessment aspect for each iteration or drilling simulation [7].

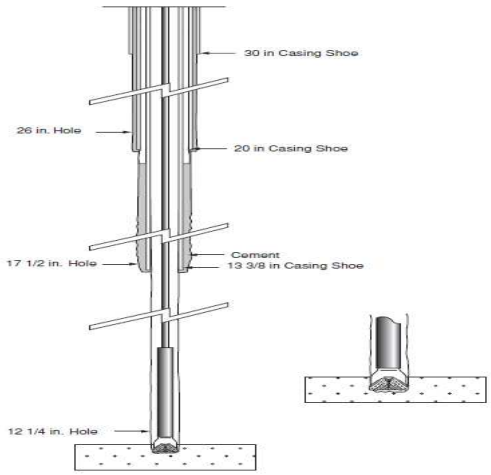

Fig.(a)

Advantages

Modeling of drilling process improves the efficiency and reduces product increase cost and enables early system testing. Furthermore it legalizes systems and sub-systems according to particular requirements during the engineering process.

Modeling of drilling process has a lot of advantages in different field of oil & gas technology in which some Implementation and analysis of the results of the modeling allows to:

- To execute transformation of examined object,
- To find its rational properties or,
- In compliance with last measure,
- Well consider his activities and characteristics;
- To designate area of introduction of model;
- To test the validity of hypotheses,
- Accepted on a step of mathematical statement,
- Put the possibility of simplifying the model in order to increase its effectiveness while maintaining the required accuracy;
- To provide a focus for the upcoming model should be improved.
- Achieve a better appreciative method by increasing a mathematical model of a system of interest, and detect the system's operation in detail over long periods of time.
- Analysis hypothesis about the system for feasibility.
- Develop well designed and vigorous method and condense structure progress time.
- Occupy a method loom to problem solving.
- It requires minimal resources and costs less.

Modeling determines load conditions on the pipeline; they also help engineers design the ILS to handle that specific load. Engineers used ANSYS Mechanical APDL (MAPDL) to analyze a 2-D global model to determine these load conditions. They used ANSYS Workbench to apply these load conditions to the local 3-D solid model of the ILS. We can see some example in figure (b) below [8]:

Inconveniences

Simulation preserve to be a time overwhelming and composite implement, during modeling impose the involvement of occupant experts and decision makers in the entire process. Generally, on every occasion of drilling process necessitate to model and analyze unpredictability in a system, it’s the implement of choice. Following checklist of consequence [9]:

- Unclear objective;
- Using simulation when an analytic solution is apposite;
- Simulation is too multifaceted or effortless;
- Using the erroneous effort probability allocation;
- Using standard statistical formulas that assume
- Sovereignty in simulation output analysis;
- Assembly one simulation scuttles for a model;
- Meager plan and resources.

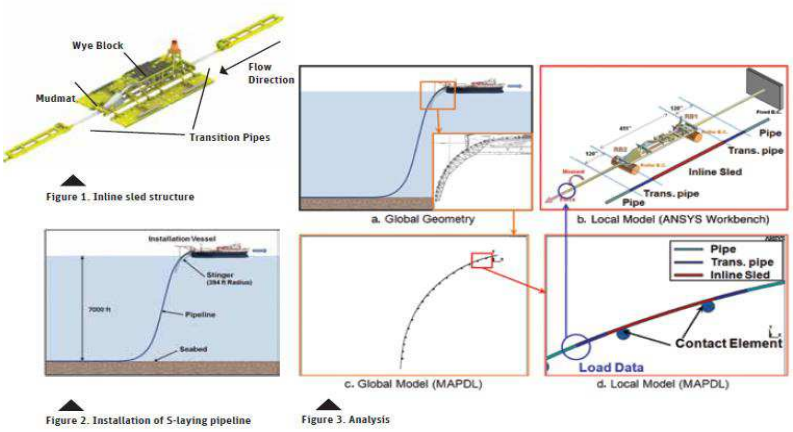

Fig. (b)

Conclusion

The principle of this study is expansion of simulation in drilling process. According to the drilling process, appropriate development was strained up. The simulation provide you an idea about the same operation as the drilling process and presents the more comprehensive information on the utility of equipments and their correlation. People can get the excellent understanding of the drilling process and the interrelated equipments. The 3D model and information model was made using the object oriented method. This method enables to add the new items and to easily expand.

The simulation preserve for the education and the research for the improvement of drilling technology. The simulation will be more effective than model or pictures for instruction. And for improved considerate of drilling process and equipments make the advance of equipments and drilling process achievable.

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ИССЛЕДОВАНИЕ ТЕХНОЛОГИИ ВАКУУМНОГО ПНЕВМОТРАНСПОРТА В ПРОЦЕССАХ ПРИГОТОВЛЕНИЯ ТАМПОНАЖНЫХ РАСТВОРОВ

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Процессы нефтегазовых технологий строительство и капитальный ремонт скважин не обходятся без приготовления и использования тампонажных растворов. Тампонажные растворы состоят из дисперсной фазы – порошкообразных материалов и дисперсионной среды – жидкости затворения [1].

В данной работе выполнены исследования одной из составляющих технологии приготовления растворов: транспортирование цемента в зону затворения из загрузочной емкости в приемную камеру гидроэжекторного смесителя (ГЭС).

Активными составляющими процесса движения аэрозольной смеси являются: значение вакуума в приемной камере $Рвак\ ГЭС$ и статическое давление порошка в загрузочной емкости $Рст_{сып}$, зависящее от уровня засыпки в нее порошка h и его плотности $\rho_{сып}$. Схема движения аэрозольного потока в зону смешивания представлена на рис. 1.