OPTIMIZATION OF DRILLING HYDRAULICS IN VERTICAL HOLES

BY:

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7139

Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Engineering (Hons)
(Mechanical Engineering)

July 2008

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
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In partial fulfillment of the requirement for the
BACHELOR OF ENGINEERING (Hons)
(CHEMICAL ENGINEERING)

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July 2008

CERTIFICATION OF ORIGINALITY

This is to certify that the writer is responsible for the work submitted in this project, that the original work is his own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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Richard Lado Longwa Milla

ABSTRACT

This report gives the account on the dissertation of the final year project report title "Optimization of Drilling Hydraulics in Vertical Hole" assigned to the student as one of the courses requirement by the Universiti Teknologi PETRONAS before his graduation. The final year project given for period of two semesters starting from January of the first semester and ends December of the second semester 2008. Immediately following the continuation of the FYP 1 on this project, the student carries on to do study on the project. In the following dissertation report, it reports on the work that has been accomplished.

The necessary conditions for attaining optimal bottom hole cleaning below a drill bit is usually approximated via the optimization of two design criteria: Hydraulic Impact force and Bit Hydraulic horsepower. The process involves running a circulating pressure test at the rig site, while keeping the rotary speed and weight-on-bit constant. The test involves varying the mud pump speed and recording the pump pressure and circulating rate at each speed.

This paper describes a proven technique that maximizes either the hydraulic impact force or the hydraulic power of the fluid hitting the bottom of the hole. The objective is to determine nozzle sizes and flow rate to deliver maximum Hydraulic Horse power (HHP) or Jet Impact Force (JIF) within specified operating constraints.

In this paper, the introductory part in chapter one talked about the background, problem statement, Objective and the scope of study. Second chapter covers the literature review on the study and chapter three the methodology used. Chapter four discusses on the finding of the study, chapter five discusses the results and final chapter six gives the conclusion and the recommendation.

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