Optimization Of Mud Hammer Drilling Performance

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Optimization Of Mud Hammer

Drilling

Optimization of Mud Hammer Drilling Performance DE-FC26-00NT40918 _____ - 9 - Scope of Work Changes Task 3.1.1 Addition The following table will be inserted or added to the agreement in

order to test Smith international mud hammer tool in Subtask 3.1.1 Test program under test sequence. All ...

Optimization of Mud Hammer Drilling Performance

This document details the progress to date on the OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE - A PROGRAM TO BENCHMARK THE VIABILITY OF ADVANCED MUD HAMMER DRILLING contract for the year starting January

2002 through December 2002. Accomplishments to date include the following; Review of 2001 Q1 2001

Optimization of Mud Hammer Drilling Performance

Optimization of Mud Hammer

Drilling Performance DE-FC26-00NT40918 _____ - 1 - Optimization of Mud Hammer Drilling Performance - A Program to Benchmark the Viability of Advanced Mud Hammer Drilling Quarterly Progress Report Reporting

Period Start Date - April 1, 2004 Reporting Period End Date - June 30, 2004 Author; Arnis Judzis, TerraTek

Optimization of Mud Hammer Drilling Performance - A ...

Optimization of Mud Hammer

Drilling Performance DE-FC26-00NT40918 _____ - 5 - INTRODUCTION In accordance with the award requirements from the Department of Energy and NETL, TerraTek (Arnis Judzis and Sidney Green) presented details

about the Mud Hammer Drilling Performance Testing Project at a January ‘kick-off’ meeting in Morgantown.

Optimization of Mud Hammer Drilling Performance

Optimization of Mud Hammer

Drilling Performance DE-FC26-00NT40918 _____ - 6 - EXECUTIVE SUMMARY Progress on the testing of fluid driven drilling hammers is on schedule. Background On January 9th of 2001, details of the Mud Hammer Drilling

Performance Testing Project were presented at a “kick off” meeting held in Morgantown.

Optimization of Mud Hammer Drilling Performance

Operators continue to look

for ways to improve hard rock drilling performance through emerging technologies. A consortium of Department of Energy, operator and industry participants put together an effort to test and optimize

mud driven fluid hammers as one emerging technology that has shown promise to increase penetration rates in hard rock.

Optimization of Mud Hammer Drilling Performance--A

Program ...

The results will be used to improve the state of mud hammer drilling at depth and improve the understanding and ability to use mud hammers at deeper depths and at higher wellbore

pressures. This knowledge is helping to redesign percussion drilling tools which have shown to drill much faster at shallower depths and lower wellbore pressures.

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optimization of mud hammer drilling performance - a program to benchmark the viability of advanced mud hammer drilling

OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE - A ...

This document details the progress to date on the OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE--A PROGRAM TO BENCHMARK THE

VIABILITY OF ADVANCED MUD HAMMER DRILLING contract for the quarter starting January 2002 through March 2002. Accomplishments include the following: In accordance to Task 7.0 (D.

OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE - A ...

This document details the progress to date on the OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE--A PROGRAM TO BENCHMARK THE VIABILITY OF ADVANCED MUD

HAMMER DRILLING contract for the quarter starting January 2004 through March 2004. The DOE and TerraTek continue to wait for Novatek on the optimization portion of the testing program (they are completely rebuilding their

fluid hammer).

OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE--A PROGRAM ...

Topics: 02 Petroleum, Testing, Business, Engineers, Personnel,

Planning, Petroleum, Drilling Fluids, Optimization, Drilling, Benchmarks, Availability, Performance, Viability

Publisher: Terra Tek, Inc. (United States)

OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE - A ...

- Drilling mud is mandatory for drilling deep wells in order to solve the cutting transport problems. - Deeper the well higher the temperature will be, making

complex equipment to fail
Most of the drilling hammers have shown excellent results when tested with air or clear water, but the

Use of Downhole Mud-Driven Hammer for Geothermal

Applications

This document details the progress to date on the ''OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE -- A PROGRAM TO BENCHMARK THE VIABILITY OF ADVANCED MUD HAMMER DRILLING'' contract

for the quarter starting October 2002 through December 2002.

OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE - A ...

This document details the progress to date on the

OPTIMIZATION OF MUD HAMMER DRILLING PERFORMANCE -- A PROGRAM TO BENCHMARK THE VIABILITY OF ADVANCED MUD HAMMER DRILLING contract for the quarter starting January 2001 through March 2001. Accomplishments to date

include the following: (1) On January 9th of 2001, details of the Mud Hammer Drilling Performance Testing Project were presented at a ...

Operators continue to look for ways to improve hard rock drilling performance through emerging technologies. A consortium of Department of Energy,

operator and industry participants put together an effort to test and optimize mud driven fluid hammers as one emerging technology that has shown promise to increase penetration rates in hard rock. The thrust of

this program has been to test and record the performance of fluid hammers in full scale test conditions including, hard formations at simulated depth, high density/high solids drilling muds, and

realistic fluid power levels. This paper details the testing and results of testing two 7 3/4 inch diameter mud hammers with 8 1/2 inch hammer bits. A Novatek MHN5 and an SDS Digger FH185 mud hammer were

tested with several bit types, with performance being compared to a conventional (IADC Code 537) tricone bit. These tools functionally operated in all of the simulated downhole environments. The

performance was in the range of the baseline ticone or better at lower borehole pressures, but at higher borehole pressures the performance was in the lower range or below that of the baseline tricone bit. A new

drilling mode was observed, while operating the MHN5 mud hammer. This mode was noticed as the weight on bit (WOB) was in transition from low to high applied load. During this new ''transition drilling mode'', performance

was substantially improved and in some cases outperformed the tricone bit. Improvements were noted for the SDS tool while drilling with a more aggressive bit design. Future work includes the

optimization of these or the next generation tools for operating in higher density and higher borehole pressure conditions and improving bit design and technology based on the knowledge gained from this test program.

This book reports the results of exhaustive research work on modeling and control of vertical oil well drilling systems. It is focused on the analysis of the system-dynamic response

and the elimination of the most damaging drill string vibration modes affecting overall perforation performance: stick-slip (torsional vibration) and bit-bounce (axial vibration). The text is

organized in three parts. The first part, Modeling, presents lumped- and distributed-parameter models that allow the dynamic behavior of the drill string to be characterized; a comprehensive mathematical

model taking into account mechanical and electric components of the overall drilling system is also provided. The distributed nature of the system is accommodated by considering a system of wave equations

subject to nonlinear boundary conditions; this model is transformed into a pair of neutral-type time-delay equations which can overcome the complexity involved in the analysis and simulation of the partial

differential equation model. The second part, Analysis, is devoted to the study of the response of the system described by the time-delay model; important properties useful for analyzing system stability are investigated

and frequency- and time-domain techniques are reviewed. Part III, Control, concerns the design of stabilizing control laws aimed at eliminating undesirable drilling vibrations; diverse control

techniques based on infinite--dimensional system representations are designed and evaluated. The control proposals are shown to be effective in suppressing stick-slip and bit-bounce so that a considerable

improvement of the overall drilling performance can be achieved. This self-contained book provides operational guidelines to avoid drilling vibrations. Furthermore, since the modeling and control

techniques presented here can be generalized to treat diverse engineering problems, it constitutes a useful resource to researchers working on control and its engineering application in oil well

drilling.