



UNIVERSITI
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FINAL REPORT

"Designing a Cement Program by Using Landmark Software at HPHT Well"

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CERTIFICATION OF APPROVAL

Designing a Cement Program by Using Landmark Software at HPHT Well

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Approved by,

(A.P. DR MUHANNAD)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my 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.

(Hafizul Naim Bin Baniram)

ABSTRACT

High-pressure, high-temperature (HPHT) wells are defined differently throughout the industry. The UK Energy Institute's Model Code of Safe Practice in the Petroleum Industry defines HPHT wells as "where undisturbed bottomhole temperature exceeds 300°F (149°C) and where mud weight in excess of 15.4 ppg is needed, or where pressure-control equipment over 10,000 psi is needed." In HPHT well, its well-known that there are so many complexities. The challenges in high temperature, high pressure cementing are usually connected to the

- Temperature regimes
- Pressure regimes
- Narrow margin between fracture and pore pressures
- Wellbore geometry. (i.e. often 5 ½" or 7" liners in high pressure zones.)
- Control of flow (gas migration) after cementing
- Chemical behaviour of mud, cement, and its additives that exist in the well and their individual and combined effects of the mud, cement and the formation characteristics.

However, regardless of those dangers and expense, the number of HPHT wells is increasing in many areas of the world. Acceptable production from HPHT well needs successful drilling and completion operation. Hence, cementing of an HPHT well is an essential part of completion and it influences the future production from the well. Designing proper cement program which is compatible with formation conditions is one of the most significant factors for a successful cement job.

This study aims on how to reduce the results of failed cement job which involved time and high cost, remedial work, and cause kick & well control problems. It needs an extra care from time to time and a software is used in order to monitor all the characteristics of the cement during the cementing job.

Through this research and studies, problems has been resolved by designing the suitable cement program. Overall data was used in OptiCem module to simulate and observe casing cementing procedures. The main concern during cementing operation found out to be ECD, which is highly affected by several factors

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