PRODUCTION ENHANCEMENT CASE STUDY

PETRONAS Carigali Sdn Bhd – Dulang West / Bekok Fields

Offshore Peninsula Malaysia

AWT DISCIPLINES

Reservoir Engineering

Production Technology

Completions Engineering

Artificial Lift Design

Well Intervention / Integrity

PROJECT BACKGROUND

The Dulang West field is located 170km from Kerteh, Peninsular Malaysia (PMO) in a water depth of about 76m. The Dulang West field is developed by one unmanned 32 slot platform (Dulang D). Production processing facilities are located on the Dulang B platform in the Dulang Unit area.

The Bekok field is located 260 km from Kerteh, Peninsular Malaysia (PMO), in the south-eastern part of the Malay basin with water depth of 70m.

Gas lift was the chosen method of artificial lift for both fields, however for Dulang West the amount of gas available for gas lift is sub-optimal due to gas compressor limitations. On the contrary, the Bekok field has less demand for gas lift due to high natural GOR of the wells.

This project was carried out to investigate and identified a list of production enhancement opportunities (idle well restoration, zone change, water shut off and wellbore integrity restoration) together with the gas lift and choke size optimization for Dulang and Bekok fields respectively.

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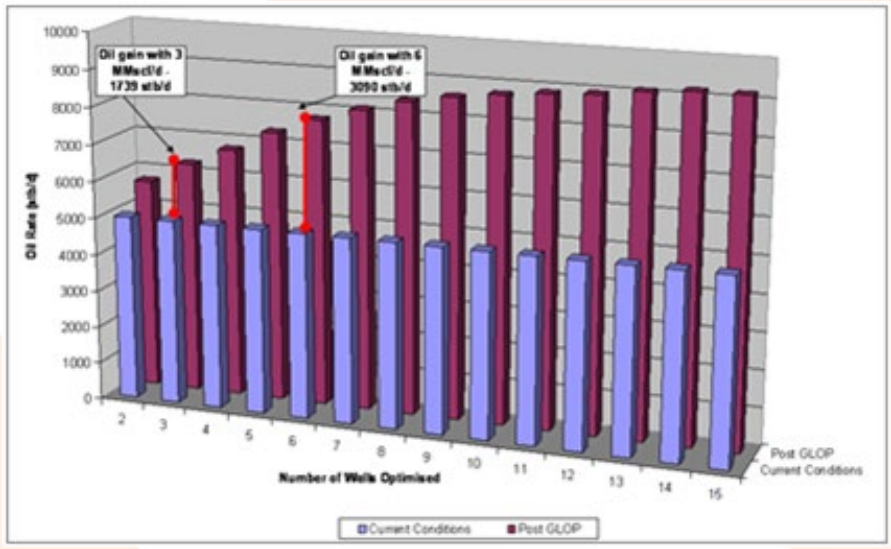
AWT WORKSCOPE

The objective was to identify and/or mature the short term production enhancement opportunities that could be realized within a given or agreed time frame, in order to reduce the gap between actual and target production forecasts.

The scope of work included the following:

- Developing a proper prioritization process to identify high potential wells for short term production gain
- Evaluate the current gas lift prioritization and revise it accordingly to ensure the available gas is being used in the best wells
- Building well performance and nodal analysis models to investigate the merit of short term production gain such as gas lift optimization, stimulation, zone change and add perforation opportunities for high potential wells
- Evaluate the restoration methods for effective idle wells and propose the way forward
- Perform material balance analysis for minor natural drive reservoirs within the field to optimize the Reservoir Management Plan and investigate the possibility of increasing reservoir withdrawal.



AWT ADDED VALUE

- As a result of the short term optimization process, AWT identified opportunities leading to a 100% increase in oil production in the short term, or over 1000 bopd incremental gain.
- The study was scheduled for a 2 month period and was completed on time and budget.