Summary

This report summarizes the dynamic simulations and evaluations performed in response to the Deepwater Horizon blowout that occurred on the 20th of April 2010. The incident occurred following a negative test performed to check the integrity of the well barriers (cement, float, casing and seal assembly). The rig personnel concluded the test was successful and the incident happened as they displaced the riser to seawater.

The analysis presented in this report was performed to gain a better understanding of the following questions:

The main reservoir in the MC252 Macondo prospect well consists of two oil bearing sands, the Upper and the Lower M56. Both sands have a pore pressure of 12.6 ppg. The top of the Upper M56 is at 18,086 ft TVD RKB and only a few feet separates the upper and the lower sands. The reservoir sands are very prolific. Based on 300 mD and 86 ft net pay, the inflow performance curve indicates a productivity index of 49 stb/d/psi for pressures above the bubble point pressure. This contributes to a fast unloading of the well if it is left open to flow in an underbalanced condition. For example a drawdown of only 1,000 psi results in an influx of 73 bpm of oil from the reservoir into the wellbore. This is equivalent to a rate of 34 stb/m at surface conditions, the oil formation volume factor is 2.14 bbl/stb.

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