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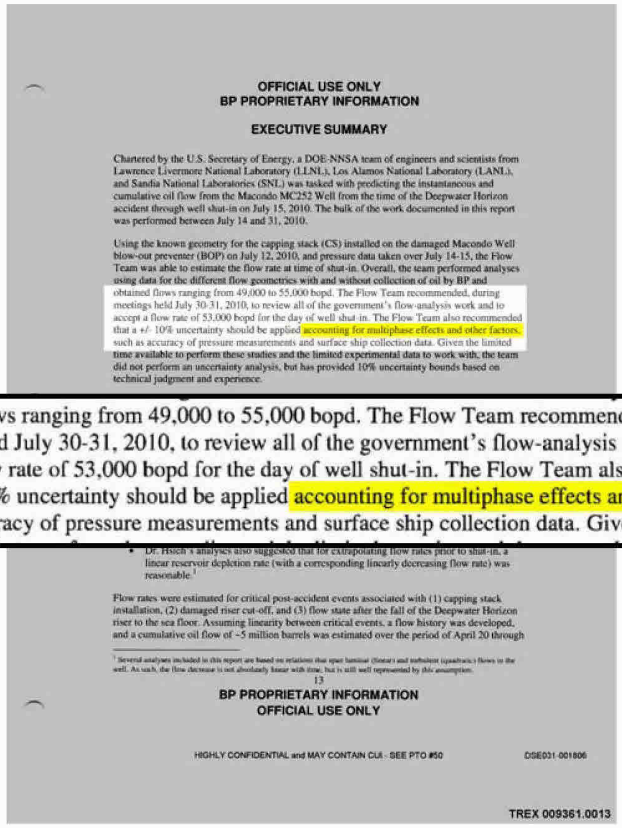

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EXECUTIVE SUMMARY

Chartered by the U.S. Secretary of Energy, a DOE-NNSA team of engineers and scientists from Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), and Sandia National Laboratories (SNL) was tasked with predicting the instantaneous and cumulative oil flow from the Macondo MC252 Well from the time of the Deepwater Horizon accident through well shut-in on July 15, 2010. The bulk of the work documented in this report was performed between July 14 and 31, 2010.

Using the known geometry for the capping stack (CS) installed on the damaged Macondo Well blow-out preventer (BOP) on July 12, 2010, and pressure data taken over July 14-15, the Flow Team was able to estimate the flow rate at time of shut-in. Overall, the team performed analyses using data for the different flow geometries with and without collection of oil by BP and obtained flows ranging from 49,000 to 55,000 bopd. The Flow Team recommended, during meetings held July 30-31, 2010, to review all of the government's flow-analysis work and to accept a flow rate of 53,000 bopd for the day of well shut-in. The Flow Team also recommended that a +/- 10% uncertainty should be applied accounting for multiphase effects and other factors, such as accuracy of pressure measurements and surface ship collection data. Given the limited time available to perform these studies and the limited experimental data to work with, the team did not perform an uncertainty analysis, but has provided 10% uncertainty bounds based on technical judgment and experience.

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- DE-Risch's analyses also suggested that for extrapolating flow rates prior to shut-in, a linear reservoir depletion rate (with a corresponding linearly decreasing flow rate) was reasonable.[1]

Flow rates were estimated for critical post-accident events associated with (1) capping stack installation, (2) damaged riser cut-off, and (3) flow state after the fall of the Deepwater Horizon riser to the sea floor. Assuming linearity between critical events, a flow history was developed, and a cumulative oil flow of ~5 million barrels was estimated over the period of April 20 through

[1] Several analyses included in this report are based on relations that span laminar (linear) and turbulent (quadratic) flows in the well. As such, the flow decrease is not absolutely linear with time, but is still well represented by this assumption.

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