DOE/BC/15213-2

ADVANCED TECHNIQUES FOR RESERVOIR SIMULATION AND MODELING OF NON-CONVENTIONAL WELLS

Quarterly Report
June 1, 2000-August 31, 2000

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Date Published: November 2000

Work Performed Under Contract No. DE-AC26-99BC15213

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DOE/BC/15213-2
Distribution Category UC-122

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DE-AC26-99BC15213

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DE-AC26-99BC15213

Advanced Techniques for Reservoir Simulation and Modeling of Non-Conventional Wells

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Tasks and Milestones (estimated dates use project start as 9/99; end 9/04)

Task (1): *Development of Advanced Reservoir Simulation Techniques for Modeling Non-Conventional Wells*

Major Milestones:

(a) Develop research code with fully three dimensional flexible grids and tensor permeabilities (start 9/99, end by 9/01)

(b) Extend code to handle three phase flow (start 9/00, end by 9/02) and selected EOR processes (start 9/01, end by 9/04)

(c) Develop parallel implementation with domain decomposition (start 9/02, end by 9/04)

Task (2): *Coupling of the Reservoir and Non-Conventional Wells in Simulators*

Major Milestones:

(a) Develop tools to compute productivity and well index for horizontal and multilateral wells (start 9/99, end by 9/01)

(b) Implement methods to account for wellbore pressure drop (with influx) for single phase flow (start 9/99, end by 9/02) and multiphase flow (start 9/01, end by 9/04)

(c) Integrate tools developed in (a) and (b) into general research simulator (start 9/01, end by 9/04)

Task (3): *Novel Approaches to Account for Heterogeneities in the Vicinity of Non-Conventional Wells*

Major Milestones:

(a) Develop techniques for upscaling single phase flow (start 9/99, end by 9/01) and two phase flow (start 9/00, end by 9/02) in the well region in heterogeneous reservoirs

(b) Integrate upscaling techniques into general research simulator (start 9/01, end by 9/04)

(c) Develop techniques for Simulation While Drilling (start 3/00, end by 9/03) and integrate into general research simulator (start 9/00, end by 9/04)