1999 Project

Title: Principles and Design Method for DWS Well Completions with Commingled Inflows of Oil and Water

Objective: To perform a study and develop technical criteria for sustainable maximized oil production using the DWS well systems operating in the commingled inflow mode when water (or oil) breakthrough is allowed and controlled by adjusted production rates.

Tasks:
1. Develop a mathematical model of commingled inflow of oil and water into the well's water drainage completion (reversed coning);
2. Write a software for computation of the dynamic oil-water interface during reversed coning;
3. Demonstrate behavior of DWS systems with reversed coning using a physical model;
4. Determine critical parameters for sustainable and unstable operation of the physical model;
5. Mathematically model the physical model's behavior;
6. Develop a computer-aided design procedure for designing inflow performance window for DWS well completions with reversed coning;
7. Determine feasibility criteria and a method to calculate maximum oil production rate for reversed coning.

Deliverables:
1. A summary report providing a basic understanding of the reservoir-well system behavior during DWS operation with reversed coning;
2. Video tapes and photographs supporting our findings from the physical model studies;
3. Theoretical recommendations regarding feasibility, technical requirements and limitations of the intensive DWS technology;