SUMMARY OF 8 OF SPE´s COMPARATIVE STUDIES CASES

First Study: (SPE 9723 – 1980)

The first study is a ”Comparison of Solutions to a Three-Dimensional Black-Oil Reservoir Simulation Problem”. The solution of the problems are related to SWELLING of OIP and the SWEEP of the gas during gas injection. The swelling is based on PVT data and the Sweep Efficiency is based on the petrophysical data. The problem is also connected to the choice of the selected solution solution Method; IMPES or FULLY IMPLICIT solution. All problems are to be simulated to both solution methods.

Second Study: (SPE 10489 – 1982)

The second study is a CONING study. The problem is simulated using a radial black-oil simulator. It is a single-well radial cross-section that involves water and gas coning as well as gas repressuring. It is a difficult problem that provides a good test of the stability and convergence behaviour of any simulator.

Third study: (SPE 12278 – 1987)

The third study is a study of Gas Cycling of Retrograde Condensate Reservoir using a COMPOSITIONAL simulator (E300). The two major parts to a comp. model study are the PVT and the GRID. The PVT data is based on a fluid analysis report. A Black-oil simulator can be used, generating the PVT data from a EOS simulator.

Fifth study: (SPE 16000 – 1987)

The fifth study is an Evaluation of Miscible Simulators using a Fourth-component miscible flood simulator and a fully compositional simulator. (Todd-Longstaff is an another possibility) The main different s between the simulators are the ”mixing rules and the relative permeabilities”. Field production and Simulator efficencioes should be examine. WAG process.

Sixth study: (SPE 18741 – 1989)

The sixth study is a Comparison of Dual-Porosity Simulators. There are two selected problems for the comparison. A single block example and a more complicated cross-sectional example simulating ; Depletion, gas and water injection cases.

Seventh study: (SPE 21221 – 1991)

The seventh study is ”Modelling of Horizontal Wells in Reservoir simulation” The problem is to reduce the coning behavior using different approaches for Calculating pressure drops in the wellbore. (E100)
Ninth study: (SPE 29110 -1995)

This study is an **Reexamination of Black-oil Simulation**.
Examination of complex heterogenities simulation. Ref. to the first and second study.

Tenth study: (SPE 66599 – 2001)

This study is **A Comparison of Upscaling Techniques**.
Based on a geological model of (60x220x85) 1122000 blocks, the number of blocks should be reduced to optimize the simulations. Both petropysical data and relperm. Have to be upscaled. This is a difficult process. The fasit is the results from the simulation of the fine gridded geological model.