Advances on Reduced Reservoir Representation for Fast Analysis of Oil Recovery Opportunities

Summary

This seminar presents recent results of a strategy that uses a reduced representation of reservoirs. The strategy facilitates the task of producing recovery projections on individual or a portfolio of reservoirs, by using space reduction techniques and analytical simulations. The drive for this type of strategies is the need to afford quick evaluation technologies that enable the decision makers to proceed with the earliest and sensible performance estimators. This is designed to use the least volume of information, which is quite adequate in situations of limited reservoir knowledge. Inference from previous experience is key for the proposed strategies, because analogs can be used to foresee the result of exploitation strategies. A database was built a few years ago and is continuously updated by using published information (TORIS database, Annual Reviews, and other sources). Reservoir data includes USA reservoirs (DOE and USGS), Venezuela, Brazil, among others. Geological indicators in the TORIS database have used to analyze the impact of Geological information on EOR screening criteria. A related doctoral work developed at Heriot-Watt University also shows the importance of gathering geological indicators for this type of analysis. To furnish decision makers with alternatives to traditional simulation strategies, an extension to local analytical models will be discussed here. One point of attention that needs further research is how to incorporate geological information in the form of numerical indicators or reservoir groups, such that analogs can be better defined. We believe that the paradigm of defining recovery strategies much later in the reservoir characterization timeline could be changed into one that allows us to define recovery plans as early as the delineation stage or even for undiscovered plays, before the drilling of the first well.