

# Preface

The Ph.D. study was started in July 2009 and several papers were reviewed on different aspects of tight gas reservoirs. The objectives of this study were to review and evaluate the factors in tight gas reservoirs that have significant influence on formation damage and well productivity, based on field data analysis, laboratory core analysis experiments, analytical approaches, and numerical simulation. In the early stage of the study, typical tight gas data were gathered from the reviewed papers, to build tight gas reservoirs simulation models at core scale, well scale and reservoir scale. Then after gathering actual laboratory and field data, the simulation models were updated to get more realistic results. The simulation models were run using industry-standard softwares that have the advantage of a high degree of validation in real-world situations. The core flooding experiments in this research study were performed using the lab facilities of Petroleum Engineering Department at Curtin University, which have been designed, developed and setup by Dr. Ali Saeedi [1].

A summary of my research over the first two years of Ph.D. studies was presented in the 2011 SPE European Formation Damage Conference, and the published paper went on the list of top 10 downloaded papers from the SPE e-library, which showed interest of the industry in results of the tight gas damage and productivity evaluation study. During the course of this research, several technical papers were published in peer-reviewed journals, all of which were relevant to the work carried out in this research. Every paper was peer-reviewed by at least two expert reviewers and their comments were applied to improve this work. These papers cover the main aspects of this research. Consequently, this Ph.D. thesis is presented based on the published papers which are explained briefly in the body of the thesis report and in more detailed in the journal papers published based on outcomes of this research work. Some sections that have not been published as journal papers, they are explained in more details in the thesis report.

Concerning the written thesis, [Chap. 1](#) presents a brief introduction about the problems associated with tight gas reservoirs and a review of past studies conducted by other researchers. The objectives and significance of this research are outlined. In [Chap. 2](#), determination of the effective permeability of tight

formations is discussed and the new techniques are proposed. In [Chap. 3](#), reservoir simulation studies for different types of well and tight reservoirs are illustrated. In [Chap. 4](#), the tight gas field data are analyzed and the well productivity issues in this field are made clear. Finally, a summary of this work is presented in [Chap. 5](#), followed by conclusions and recommendations.

## Reference

1. Saeedi Ali (2012) Experimental study of multi-phase flow in porous media during CO<sub>2</sub> geo-sequestration processes, Springer Theses.

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in Tight Gas Reservoirs

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