

PREFACE

The concept for *Lecture Notes on Applied Reservoir Simulation* probably began in 1971 while I was working for the (then) Atlantic Richfield Company. Reservoir simulation was a new and innovative concept, taxing computers and engineers to their fullest. Early model developers (of which I was one) were minimal users and as a result, most simulation courses (and eventually, books) dealt to a large extent with simulation theory and development. I was fortunate to be in a position to perform model studies and debug user problems; while many of these problems were actual model errors (especially early on), a fair amount of the discrepancies resulted from a lack of understanding of the simulator capabilities, or inappropriate data manipulation.

On joining the faculty of the University of Missouri-Rolla, I determined that since the majority of petroleum engineering students were undergraduates, they would in all likelihood be model-users, not developers, and in 1975, the first (and minimal) edition of these notes was created. The notes have been updated annually since that time to reflect changes in both simulation concepts and philosophy.

The Society of Petroleum Engineers' publication of *Reservoir Simulation*, Monograph Volume 13 (referred to as M-13 throughout this book) is an excellent collection of simulation examples from various literature sources; however, it is what the name implies (monograph: a treatise on a particular subject) and not

necessarily a suitable stand-alone instructional text. Also, note that all of the authors are affiliated with the same company, resulting in somewhat similar viewpoints.

Finally, these lecture notes are as titled, *Lecture Notes on Applied Reservoir Simulation*, not “how to build models” or an in-depth course in reservoir engineering, although portions of each concept must be included in any discussion of reservoir simulation. I have tried to stay with “tried and true” simulation practices and have mentioned new methods which appear to be useful in applied modeling.

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