Building an Appropriate Dynamic Model of a Structurally Complex, Naturally Fractured Foothills Field for Field Development Planning

Ben Stephenson[1], Lynne Drover[1], Irma Eggenkamp[1], Martin Kraemer[1], David Repol[1], Warren Griswold[2], and Alula Damte[3]
[1]Shell Canada Energy, Calgary, AB, Canada; Ben.Stephenson@shell.com
[2]APA Petroleum Engineering, Calgary, AB, Canada
[3]Petrel-Robertson Consulting Ltd, Calgary, AB, Canada

Abstract/Excerpt

The Moose Mountain field, 50km southwest of Calgary, is a folded thrust sheet, containing sour (13% H_2S) natural gas in tight, naturally fractured carbonate rocks. The so called, 'Main Pool' came onstream in 1986 and the 'West Imbricate' came onstream in 2002; the latter being the focus of this paper. The West Imbricate is not unitized and as there are multiple interest holders, there is a strong business driver to have a dynamic simulation model to be able to assess the value of potential infill locations (given one well per section), based on an accurate representation of the sub-surface heterogenity. A static and a dynamic model were constructed by an integrated team, which incorporated scale-appropriate representation of the porosity distribution, 3D fault geometries and the natural fracture system, and facilitated a coherent strategy for field development planning.