

Geomechanics and SAGD

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ABSTRACT

Geomechanics is significant to SAGD applications. The McMurray sands are poorly consolidated and behave more like soils than typical rocks. There are a number of geological, log analysis and engineering implications to this.

1. Formation evaluation is affected by dilation of the core. This issue has been recognized for some time and has resulted in the use of assay techniques such as weight percent bitumen. In situ, well logging tools make measurements on the formation, which has not been significantly dilated. These effects must be taken into account to accurately determine reservoir properties.
2. The SAGD process inherently takes advantage of dilation caused by high pressure steam injection. The effects of geomechanics are to significantly increase permeability, which greatly enhances the SAGD process. These effects should also be taken into account in predicting performance.

The purpose of this article is to outline the underlying concepts behind geomechanics and then to demonstrate that geomechanics are necessary for a consistent formation and project evaluation of SAGD projects.