

*McLellan, P.J., Hawkes, C.D., and Yuan, Y., Minimizing Borehole Instability Risks in Build Sections Through Shales, Presented at the 7th SPE/CIM One Day Conference on Horizontal Well Technology, Calgary, Alberta, Nov. 3, 1999.*

## **Abstract**

Borehole instability problems such as stuck pipe, hole enlargement causing poor hole cleaning, and deviation control often arise in the build sections of horizontal wells drilled from surface or as re-entries from existing vertical wells. A drilling fluid system with optimized density, fluid loss, and clay inhibition properties can usually be selected to eliminate or reduce the risk of costly lost time. The selection of such a fluid system depends upon the characteristics of the shales, the in-situ stress state, the planned well trajectory and other well design criteria. This paper reviews the principal causes of mechanical and chemical instability in shales located in build sections and demonstrates several practical software tools and techniques for designing such wells. One international and two Western Canadian field examples in different types of shale will be presented.

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