

## **Advances in Formation Gas Measurements using Pulsed Neutron Instrumentation with Examples from the WCSB**

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### **Abstract**

The identification and measurement of formation gas is an important application of pulsed neutron reservoir monitoring systems. New developments in the use of pulsed neutron instruments for the identification and measurement of formation gas through casing will be presented. In particular reservoir conditions sigma may be used for quantitative gas saturation measurements; however, in the general case, gas identification is traditionally accomplished using qualitative curve overlay methods. This presentation describes the application of new instrumentation, gas response characterization, and interpretation algorithm to the determination of quantitative gas saturation. The new pulsed neutron instrumentation provides a significant increase in gas sensitivity. Field examples, including examples from the Western Canada Sedimentary Basin, will be discussed illustrating the interpretive features of the new techniques.