

## **Microseismic Monitoring of a Hydraulic Fracture in a Horizontal Well Near Pouce Coupe BC**

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### **Summary**

Fracture stimulation of multiple stages in horizontal wells often leads to questions about the efficiency of the fracture treatment in the individual stages and how it might vary. Production results in horizontal wells, compared with vertical wells in the same pool, can give rise to the same questions about the relative behaviour of the treatments at the different stages.

In 2006 a microseismic monitoring survey was acquired and processed in a horizontal well with 5 treatment stages using the 'PackersPlus' completion system. The survey clearly demonstrated that the treatments near the toe of the well, and those near the heel, behaved very differently from each other, with those near the heel being the more 'conventional', linear features in the direction of maximum stress.

Subsequent integration of the microseismic results with 3D seismic and porosity data suggested that the more predictable fracture results occurred in the higher porosity part of the wellbore and the less structured treatment results were observed in the lower porosity area. It is not suggested that the porosity itself had a direct effect on the style of the fractures, rather that there may be a common cause. In terms of survey value the cause-and-effect and common-cause resolution is irrelevant since porosity detected from the surface seismic can still be used to optimise well placement