

# **Assessment of Prospect Compartmentalization and Its Impact Upon Valuing Exploration Opportunities**

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Fault seal analysis as applied to exploration has traditionally been viewed as a tool to quantify the trap risk of fault bounded structures. Any complexity due to intra-reservoir faulting is often dealt with post discovery or even post appraisal after surprises during early production. This talk will illustrate a workflow for the assessment of intra-reservoir seal risk remote from well control and will discuss the impacts on value. With modern 3-D seismic data a significant proportion of the intra-prospect faults can be interpreted producing a fault framework of the main target.

The fault properties applied to the framework will be dependant upon the stratigraphic variation, geohistory and the rheology of the lithologies at the time of faulting. Fault zone clay contents obtained from a range of prospect specific depositional models integrated with the fault framework and a fault zone clay percentage estimation technique. The workflow provides a range of sub-surface models that can be developed into initial fluid flow models to test the impact of production. In complexly faulted traps it maybe necessary to discuss sensitivities in sub-areas and scale the effects to the prospect as a whole.

The model can be used to assess production rates and ultimate recovery with a given well drilling program. Hypothetical well placements, numbers of production wells and aquifer assumptions can be varied to optimize the model. This workflow allows rapid assessment of the value of exploration prospects with a high probability of compartmentalization and informed decisions to be taken at an early stage.