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### **Structural Uncertainty in Fault Seal and Transmissibility Analysis**

Successful fault seal predictions require accurate representations of both the stratigraphy and structure (crest, spill, and hangingwall and footwall cutoff elevations). The complexity of stratigraphic variation adjacent to a fault zone, including unconformities, as well as the structural complexity associated with fault zone development, are often not recognized in data typically used as input to fault seal analyses. As a result, erroneous predictions can be made which may lead to the assumption that the fault zone must seal sand-on-sand juxtapositions.

This study examines the uncertainty associated with fault seal and transmissibility analyses and how the range of uncertainty in our results is controlled by structural uncertainty (i.e. throw, fault zone geometry, number of faults) and stratigraphy (i.e. Net:Gross, stacking pattern). A series of sensitivity studies are presented to assess these parameters.

The results from this study can be used to better constrain the uncertainty in our predictions and to identify situations where detailed mapping and analyses are warranted from those where further detailed work is not required.