Abstract Submitted for the MAR08 Meeting of The American Physical Society

Development of a Fracture Network: blocks and springs model MARTIN FERER, ADAM JOZWICK, Physics, West Virginia University, DUANE SMITH, U. S., D. O. E., National Energy Technology Laboratory — Since flow in fractured reservoirs is significantly enhanced by clusters of inter-connecting fractures, it's important to understand their inter-connectedness. In these fractured reservoirs, one often finds two sets of fractures due to two separate geologic events. We have developed a blocks and springs model to study how the second generation fractures intersect the first generation of. We find a percolation-like transition where the cluster size grows with increasing strain leading to system-spanning fractal clusters. Increasing the thickness of the layer being fractured leads to sparser system-spanning fracture clusters with smaller fractal dimension. We have studied how the thickness of the layer affects the fractal character of the fracture clusters as well as their number distribution, and the correlations within the large fracture cluster.

> Martin Ferer Physics, West Virginia University

Date submitted: 26 Nov 2007

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