

# STRUCTURAL ANALYSIS OF FRACTURE AND VEIN VARIATIONS NEAR FAULTS IN UTICA BLACK SHALE, MOHAWK VALLEY, NEW YORK STATE

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This study seeks to create predictive models for fracture characteristic variations in faulted bedrock through the use of multilinear multivariate and partial least squares statistical analyses. These characteristics include average fracture spacing, FID width and number of fractures within the FID. The models take into account fault slip, lithologic and rheologic variables as the predictor variables. Re-Os geochronology will be utilized to constrain the timing of vein-fill fracture formation. Information gained from this analysis will aid in inferring the depth at which fracturing occurred after the incorporation of subsidence curves. The amount of slip accumulated on the multiply-reactivated faults can then be constrained for that time interval.

Vein-filled fracture and fault data has been collected from 38 outcrops in the Mohawk Valley of eastern New York. A total of 3678 fractures and veins have been measured with 17 fault-fracture pairs identified for statistical and geochemical analysis. Findings from this research can be applied to petroleum geology by supplying geologists with models that predict fracture domain characteristic based on faulting activity. Information gained from these predictive models will aid in the planning of laterals for hydraulic fracturing in faulted basins.

AAPG Search and Discovery Article #90249 © 2016 AAPG Foundation 2015 Grants-in-Aid Projects