



Petroleum Technology Transfer Council

APPALACHIAN BASIN

## Braid-Delta Facies Interpreted From Cores, Granny Creek Oil Field Of West Virginia

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### ABSTRACT :

Based on the analysis of 12 full-bore cores, the Big Injun sandstone (Mississippian Price Formation) in and around Granny Creek oil field is divided into two major facies of a braid delta. We interpret the lower, fine-grained litharenite and sublitharenite to be of a distributary-mouth bar. Subfacies include (1) the mouth-bar front: very fine sandstone, shaly and organic rich, with horizontal and inclined parallel laminae; (2) the bar crest: fine sandstone, texturally mature, slightly pebbly, with small-scale trough cross-laminae; and (3) the back of the mouth bar: an interbedding of fine sandstone with parallel laminae and pebbly coarse sandstone with channel-fill cross-laminae. The bar crest is the best reservoir and the primary pay zone. Porosity ranges from 10 to 23%, and permeability, up to 24 md. Primary pores are relatively small, typically less than 0.100 mm, but well connected and not greatly reduced by cement.

The upper Big Injun, consisting of very coarse quartzarenite and sublitharenite, is fluvial in origin. Subfacies include (4) channel lag: conglomerate with a scoured base and large-scale trough

cross-laminae; and (5) transverse bar: medium to coarse sandstone with large-scale planar cross-laminae and fining-upward sequence. Calcite and quartz cement significantly reduce porosity in the fluvial section although permeability may be high due to the rocks' large pore throats.

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