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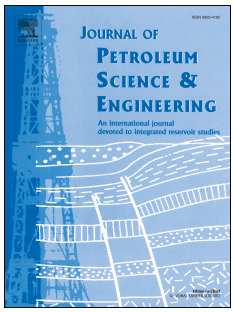

Characteristics of in-situ stress distribution and its significance on the coalbed methane (CBM) development in Fanzhuang-Zhengzhuang Block, Southern Qinshui Basin, China

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Characteristics of in-situ stress distribution and its significance on the coalbed methane (CBM) development in Fanzhuang-Zhengzhuang Block, Southern Qinshui Basin, China

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Abstract: In-situ stress is a vital index on the coal reservoir permeability and coalbed methane (CBM) development. Based on 41 sets of well test data at depths (*h*) of 353 to 1273 m in Fanzhuang-Zhengzhuang Block, the distribution of in-situ stress was analyzed systematically and its effect on coal permeability was also addressed. Results show that stress fields could convert in the vertical and four ranges corresponding to the certain depth can be characterized: the $\sigma_H > \sigma_v > \sigma_h$ type mainly occurs in the shallow and deep coal seams (< 600 m and >825m); From 600 to 725m, a stress transition zone can be observed ($\sigma_H \approx \sigma_v > \sigma_h$); The $\sigma_v > \sigma_H > \sigma_h$ type is dominant within depth from 725 to 825 m. With the increase of depth, well testing permeability (k) exhibits a trend of decrease (h < 600 m, 0.055 < k < 0.91mD) - increase (600 < h < 825 m, 0.02 < k < 1.13 mD) - decrease (h > 825 m, k < 0.1 mD), the essence of which is the open and closure of pores and fractures under the control of stress regime and vertical belting. Meanwhile, the correlation between gas content and depth was also illustrated, which shows two trends at the depth of 200 ~