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Inclusion of Connate Water in Enhanced Gas Recovery Reservoir Simulations

Milan J. Patel, Eric F. May, Michael L. Johns

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### Highlights

- Successful inclusion of connate water into Enhanced Gas Recovery simulations
- Weak Lagrange multiplier approach used for efficient VLE computations in FEM model
- Connate water generally results in a reduction in methane recovery
- Connate water's primary effect was on the flow field of the injected supercritical CO<sub>2</sub>
- Well perforation depth found to be critical, in particular that of the production well.

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