主题: Your Submission
发件人: JNGSE <eesserver@eesmail.elsevier.com>
日期: 2019/3/8 4:59
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Ms. Ref. No.: JNGSE-D-18-01722R1
Title: Numerical modeling of CO2 fracturing by the phase field approach
Journal of Natural Gas Science & Engineering

Dear Professor Yongxing Shen,

The reviewers have commented on your above paper. They indicated that it is not acceptable for publication in its present form.

I would appreciate if you could submit your revised paper by Mar 28, 2019.

However, if you feel that you can suitably address the reviewers' comments (included below), I invite you to revise and resubmit your manuscript.

Please carefully address the issues raised in the comments.

If you are submitting a revised manuscript, please also:

a) outline each change made (point by point) as raised in the reviewer comments

AND/OR

b) provide a suitable rebuttal to each reviewer comment not addressed

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I look forward to receiving your revised manuscript.

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Yours sincerely,

Wei Yan, Ph.D.
Executive Editor
Journal of Natural Gas Science & Engineering

Note: While submitting the revised manuscript, please double check the author names provided in the submission so that authorship related changes are made in the revision stage. If your manuscript is accepted, any authorship change will involve approval from co-authors and respective editor handling the submission and this may cause a significant delay in publishing your manuscript.

Reviewers' comments:

Executive Editor: Reviewer #3 still have some critiques on the methods used in this study. Please modify the current manuscript or provide a rebuttal for the reviewer's comments.

Reviewer #2: To the best of my knowledge, the proposed method is novel and the paper is well written. All my questions have been answered in this revision.

From my opinion, this paper is acceptable for publication without further revision.

Reviewer #3: The modification does not solve my major concerns.
1. Regarding Question #4
The phase field method for hydraulic fracture modeling is indeed successfully verified through semi-analytical solutions in other researchers' work. However, this does not indicate all the models utilizing the phase field method can be correctly verified through the semi-analytical solutions. The authors have to demonstrate that the model in this paper can match the semi-analytical solutions. I cannot understand why the authors think it is not necessary to verify their model just because the verification of the same method is already performed by other researchers.
Mandel's problem is a typical poroelastic problem. It is not for incompressible fluid. The principles behind the poroelastic borehole are the same as those in the Mandel's problem. The authors did not demonstrated typical poroelastic response through borehole pressurization.
2. Regarding Question #2
All the given three references assume that grains are incompressible, which could be used approximately for soil. But this study is not about soil, it is about reservoir rock. There would not be too many people in the petroleum industry using this assumption in simulations.
3. Regarding Question #3
The discretization of the weak form is for solid part of a poroelastic model. The fluid flow part is entirely ignored.
In summary, the sequential coupling through volume strain is not correct; the model is not verified correctly, the correctness of the numerical model presented here is unknown.

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