Skoltech
Skolkovo Institute of Science and Technology

Jury Member Report – Doctor of Philosophy thesis.

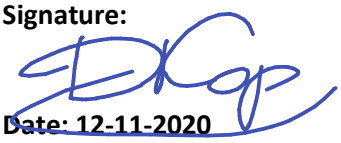
Name of Candidate: Aysylu Askarova

PhD Program: Petroleum Engineering

Title of Thesis: Physical and numerical modeling of thermal methods of EOR and improvements of oil recovery

Supervisor: Associate Professor Alexey Cheremisin

Name of the Reviewer: Dmitry Koroteev

I confirm the absence of any conflict of interest	**Signature:**  **Date: 12-11-2020**

The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Aysylu Askarova's PhD thesis is well structured and written with a proper level of clarity. The thesis covers thermal methods for enhancing of oil recovery. It includes both experimental and numerical studies.

There is a good overview of literature in the beginning. The overview covers the up-to-date articles within the area. The overall problem statement comes after the review. It is clear and straightforward. Then, the experimental part is coming. It includes the unique data obtained within Skoltech's combustion tubes. Aysylu also describes the physics of organic matter influence on the final results.

It is nice to see the presence of the upscaling effort to apply the obtained data to actual field scale of Kirsanovskoye oilfield.

Publication record is perfect and includes more than three publications in Q1 journals like Journal of Petroleum Science and Engineering.

There are some minor issues within the text to be addressed prior or during the defense:

1. Please check for typos. There are quite a few of them
2. Please consider and economical aspects in the thermal EOR in a more straightforward form. As simple as addressing the question “how much extra money we get applying thermal methods with respect to an additional cost associated with combustion initiation, infrastructure building etc.”

Overall, I have no doubt that that Aysylu’s thesis is on a proper level of PhD dissertation and Aysylu deserves the PhD title.

Provisional Recommendation

☒ *I recommend that the candidate should defend the thesis by means of a formal thesis defense*

☐ *I recommend that the candidate should defend the thesis by means of a formal thesis defense only after appropriate changes would be introduced in candidate’s thesis according to the recommendations of the present report*

☐ *The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defense*