

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Tagir Karamov

PhD Program: Petroleum Engineering

Title of Thesis: Void space evolution and organic matter transformation of Bazhenov Formation rocks during high temperature treatment

Supervisor: Professor Mikhail Spasennykh

Name of the Reviewer: Professor Nikolai Pedentchouk

I confirm the absence of any conflict of interest	Date: 13-04-2022
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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

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevance of the topic of dissertation work to its actual content
- The relevance of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications

The summary of issues to be addressed before/during the thesis defense

The PhD thesis titled "Void Space Evolution and Organic Matter Transformation of Bazhenov Formation Rocks During High Temperature Treatment" by Tagir Karamov is a well-written document that contains high-quality data with significant implications for industrial applications, particularly in the area of exploration and development of unconventional hydrocarbon resources.

The thesis provides a literature review, gives justification as to why the Bazhenov Formation was chosen as the study object for testing and developing new methodologies for more efficient hydrocarbon recovery, describes the methods of thermal treatment of mineral matrix and organic matter as well as the results obtained, and then provides a thorough analysis of these results. The methods chosen are highly appropriate for addressing the stated aim and objectives of the work and the results have high scientific and industrial significance.

Before submitting this thesis, the candidate was involved as a co-author in a number of high-quality publications in Q1 and Q2 international journals. The publications are directly relevant to the PhD thesis under consideration. The author was also involved as a co-author in a patent granted by the Russian authorities. It is hoped that the work presented by the candidate at several recent international and national conferences will convert into first-author publications in peer-reviewed high impact journals.

As mentioned above, the thesis is well written and well structured. However, there are a number of minor grammatical issues (particularly with subject-verb agreement) that occur throughout the thesis. I recommend that the author proofreads the thesis to correct this type of grammatical errors. More importantly though I suggest revising Chapter 7 by including more information about the significance of the main groups of results (i.e., given as 1., 2., etc.). A summary of results is given, but it is not very clear what each of those results actually imply when using thermal methods in hydrocarbon recovery. Adding a brief statement for each group of results would be very useful before the author moves onto 'Recommendations'.

Overall, I found the thesis to be of high quality, well written and well presented. The candidate should be given the opportunity to defend this thesis as scheduled.

Provisional Recommendation
<input checked="" type="checkbox"/> <i>I recommend that the candidate should defend the thesis by means of a formal thesis defense</i>
<input type="checkbox"/> <i>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</i>
<input type="checkbox"/> <i>The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defense</i>