

Jury Member Report – Doctor of Philosophy thesis.


Name of Candidate: Anuar Shakirov

PhD Program: Petroleum Engineering

Title of Thesis: Determining thermal properties of sedimentary rocks from well-logging data

Supervisor: Professor Yuri Popov

Name of the Reviewer: Ramil Sharafutdinov

I confirm the absence of any conflict of interest 	Date: 09-08-2021
--	-------------------------

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

The data on rock thermal properties of sedimentary rocks is crucial for many fundamental and applied tasks both in petroleum engineering and in geothermics. Thus, development of any methods or algorithms that allow reliably predicting thermal properties from well-logging data are highly relevant without any doubts.

The thesis prepared by Anuar is well structured and is based on representative experimental data. One of the advantage of the presented thesis is including data from conventional and unconventional hydrocarbon reservoirs.

The research is definitely significant on the international level that is supported by the list of Anuar's publications. The implementation of the developed techniques prove the practical applicability of the obtained results.

There are several issues I would like Anuar to address before the thesis defense:

1. I can see that regression based approach in most cases yields more precise predictions compared to theoretical-model based. Please extend the discussion on the conditions when theoretical-model based approach is preferable.
2. Please, highlight the novelty of the obtained results in the abstract.

3. From the obtained results, I see that thermal conductivity perpendicular to the bedding plane cannot be predicted with the same quality as thermal conductivity parallel to the bedding plane. Please extend the discussion on that issue.
4. I do not see any recommendation for future research. Please add.
5. You presented a new data on terrestrial heat flow in the implementation part. If possible, please add the maps with well locations.
6. You addressed your research only to sedimentary rocks. Please add the discussion on applicability of your technique to other types of rocks.
7. Please check once again for the grammatical typos. I have seen several of them within the text.

Anuar 's thesis certainly satisfies the thesis requirements of his PhD program. The presented research results may be considered as complete qualification for the PhD candidate.

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