

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Viktor Duplyakov

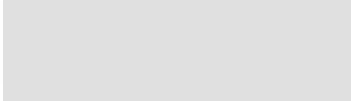
PhD Program: Petroleum Engineering

Title of Thesis: Machine learning on field data for hydraulic fracturing design optimization

Supervisor: Professor Andrei Osiptsov

Co-supervisor: Professor Evgeny Burnaev

Name of the Reviewer:

I confirm the absence of any conflict of interest. 	Date: 4-10-2023
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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 submitted thesis is generally well written and structured. The quality of research is at a high level. The research methods are all relevant to the topic and the findings are of high practical value.

Some figures are hard to read such as Fig. 2.1 and 2.4. In general, the font sizes in figures are too small.

Some terms like “pad share” and “pad volume” are never properly defined and the document need to be checked carefully to improve its precision and clarity. Many acronyms are not properly defined either such as the t-SNE method which is used extensively. It is required to explain its importance and value for the research work. The same comment applies to the acronym “NaNs”. The author must be more careful to make sure readers can follow his logic and understand the real value of his contributions to the field.

In 5.1, first phrase : “The resulting gathered during the study database...” needs to be modified.

The publications are of high quality and exceed our program requirements.

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