

Author's Accepted Manuscript

An Integrated Approach in Determination of Elastic Rock Properties from Well Log Data in a Heterogeneous Carbonate Reservoir

Mansoor Zoveidavianpoor



www.elsevier.com/locate/petrol

PII: S0920-4105(17)30420-5
DOI: <http://dx.doi.org/10.1016/j.petrol.2017.04.005>
Reference: PETROL3945

To appear in: *Journal of Petroleum Science and Engineering*

Received date: 17 May 2015
Revised date: 30 March 2017
Accepted date: 5 April 2017

Cite this article as: Mansoor Zoveidavianpoor, An Integrated Approach in Determination of Elastic Rock Properties from Well Log Data in a Heterogeneous Carbonate Reservoir, *Journal of Petroleum Science and Engineering*, <http://dx.doi.org/10.1016/j.petrol.2017.04.005>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

An Integrated Approach in Determination of Elastic Rock Properties from Well Log Data in a Heterogeneous Carbonate Reservoir

Mansoor Zoveidavianpoor

National Iranian Oil Company, Tehran, Iran. Tel: +98-91611049, email: mansoor353@yahoo.com

Department of Chemical Engineering, Mahshahr Branch, Islamic Azad University, Mahshahr, Iran

Abstract

Elastic rock properties are of particular importance for development of petroleum reservoirs. This paper demonstrates the adoption of an integrated multi-disciplinary practice workflow for determination of rock elastic properties. Since the availability of reliable sonic wave velocity leads to the improvement of determination of elastic rock properties, a rigorous data mining procedure is established to predict compressional wave velocity (Zoveidavianpoor et al., 2013a, 2013b; Zoveidavianpoor, 2014). Then, two empirical correlations are developed for measurement of shear wave velocity (V_s) and static Young's modulus (E_s) and the results were compared with the literature. Correlation coefficients are used as criteria for checking whether the given results are appropriate for the purpose. The proposed framework has been applied successfully to a heterogeneous Middle Eastern carbonate reservoir. The predictions were in excellent agreement with the core data. Also, it was observed that the proposed correlations for V_s and E_s provide better estimation when compared with the commonly used correlations in carbonate reservoirs. The results support the robustness of the proposed integrated approach for production decisions in developing a mature heterogeneous carbonate reservoir, which had previously not been possible.

Keywords: Shear wave, Poisson' ratio, Young moduli

Download English Version:

<https://daneshyari.com/en/article/5484434>

Download Persian Version:

<https://daneshyari.com/article/5484434>

[Daneshyari.com](https://daneshyari.com)