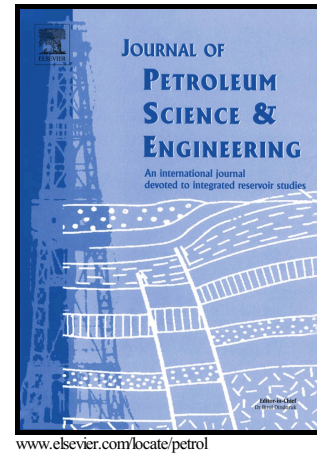


Rock physics-based carbonate pore type identification using Parzen classifier

Amir Mollajan, Hossein Memarian



PII: S0920-4105(16)30107-3
DOI: <http://dx.doi.org/10.1016/j.petrol.2016.03.021>
Reference: PETROL3398

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

Received date: 16 May 2015
Revised date: 16 January 2016
Accepted date: 30 March 2016

Cite this article as: Amir Mollajan and Hossein Memarian, Rock physics-based carbonate pore type identification using Parzen classifier, *Journal of Petroleum Science and Engineering*, <http://dx.doi.org/10.1016/j.petrol.2016.03.021>

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.

Rock physics-based carbonate pore type identification using Parzen classifier

Amir Mollajan¹, Hossein Memarian²

Abstract

Seismic velocity variation in carbonate rocks is a complicated function of different parameters such as mineral composition, porosity, pore type, saturation, and pore pressure. Among all, pore type is the main factor that affects reservoir permeability heterogeneity and change the velocity-porosity relationship. In this paper, a rock physics-based algorithm is presented to quantitatively identify three dominant pore types in a carbonate reservoir. The proposed algorithm is applied on data related to three wells drilled in a carbonate reservoir, southwest of Iran. We used the frame flexibility factor (γ), P-wave velocity-porosity and S-wave impedance-porosity trends as inputs of Parzen classifier to identify predominate pore type characterized by velocity-deviation log (VDL) in each depth. The results show that the proposed algorithm has high precision in classifying identified pore types with average accuracy of 76.7% throughout studied oil field.

Keywords: Rock physics, The frame flexibility factor (γ), Velocity Deviation Log (VDL), Parzen classifier, and Iran.

¹Ph.D student of Exploration Engineering, School of Mining Engineering, University College of Engineering, University of Tehran, Tehran, Iran, a.mollajan@ut.ac.ir, Tel: +989124147906, Fax: +982188008838.

² Professor of Geo-Engineering, School of Mining Engineering, University College of Engineering, University of Tehran, Tehran, Iran, memarian@ut.ac.ir.

Download English Version:

<https://daneshyari.com/en/article/8126090>

Download Persian Version:

<https://daneshyari.com/article/8126090>

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