

عنوان مقاله:

Application of nano indentation test to derive the mechanical parameters of rocks

محل انتشار:

چهارمین کنفرانس ملی ژئومکانیک نفت نوآوری و فناوری (سال: 1401)

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نویسندگان:

Najmeh Jafarizadeh - *Geology Department, Shahid Chamran University of Ahvaz | Ahvaz, Iran*

Ayub Elyasi - *Geomechanics Department, CAPE Consultant Group | Tehran, Iran*

Ali Kadkhodaie - *Geology Department, University of Tabriz | Tabriz, Iran*

Mahsa Abdollahi - *Geology Department, Birjand University | Birjand, Iran*

خلاصه مقاله:

Rock properties and present-day stresses are paramount parameters in developing of the rock mechanical model of a reservoir. Precise model is the basic requirement of different studies related to drilling geomechanics (borehole stability and safe mud weight window and etc.), completion geomechanics (hydraulic fracture, perforation, sand production and etc.) and reservoir geomechanics (fault reactivation, caprock integrity, porosity and permeability changes and etc.). Crushed particles of core samples are a superb source of data for mechanical parameters. Nano indentation equipment operates on small crushed samples to derive hardness or elasticity modulus. As such, this research attempts to focus on the Nano indentation result to evaluate the modulus obtained indirectly from common well logging correlations. Multiple well logs data is used to derive initial modulus's estimation and results are compared with indentation tests with depths around order of ۱۰ Nanons done by Vicker indenter. According to statistical distribution analysis, there is a high correlation between the hardness and elasticity modulus achieved from indentation experiments and the values obtained from the field logging interpretations.

کلمات کلیدی:

Nano indentation testing, Geomechanical parameters, Harvey-۱, Southern Perth Basin

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