

Geomechanical properties of Bashkirian carbonates from Akanskoye deposit subject to lithogenetic type

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2018 Neftyanoe Khozyaystvo. All rights reserved. Article briefly describes results of experimental investigations of geomechanical properties for major lithogenetic types of carbonate rocks, constituting the typical sedimentary sequence for the Bashkirian stage of the middle Carboniferous. Feature of experimental work has been conducting laboratory tests on large-sized samples, close to a full-sized core rock (63 mm diameter, with height to diameter ratio in between 1:1-2:1). To account for anisotropy of elastic and strength properties for carbonates, sampling has been carried out in two orthogonal directions: along bedding and cross bedding. In absence of standard documentation to execution of researches for the samples of specified size, methodical sequence of laboratory experiments is offered, for receipt of maximum informativeness on mechanical and formation reservoir properties. Results showed significant difference for bioclast-zoogenic type I and type II limestones by physical and mechanical properties, but also on the character of development of deformation in zones weakness - shear fracture plane. Research methods and results include a few cutting-edge technical solutions in the context of "digital core". A result shows the efficacy of computed tomography to determine porosity. Using special algorithms for raw data processing of X-ray tomography allows to classify porous space by dimensions. Volumetric model with texture, carried out as a result of photogrammetry applicable to highlight the natural fracturing of rocks. Correlation between p-wave propagation measurements in laboratory on core samples and derived from acoustic well logging has been noticed. As a rapid analysis method of the mechanical properties of carbonate rocks, authors recommends to use a Schmidt rebound hammer, as a cheaper and more affordable alternative to continuous profiling with a scratcher.

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Keywords

Fracture, Hydraulic fracturing, Microseismic monitoring, Remote sensing, Well logging, World stress map

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