

Accepted Manuscript

Continuous rock drillability measurements using scratch tests

Junhai Chen, Y. Feng, Yannong Han, Chengcheng Niu

PII: S0920-4105(17)30646-0

DOI: [10.1016/j.petrol.2017.08.030](https://doi.org/10.1016/j.petrol.2017.08.030)

Reference: PETROL 4193

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

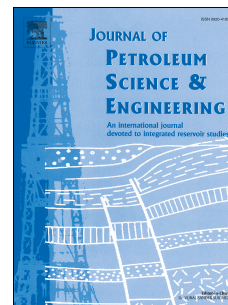
Received Date: 3 August 2016

Revised Date: 26 June 2017

Accepted Date: 11 August 2017

Please cite this article as: Chen, J., Feng, Y., Han, Y., Niu, C., Continuous rock drillability measurements using scratch tests, *Journal of Petroleum Science and Engineering* (2017), doi: 10.1016/j.petrol.2017.08.030.

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 proof before it is published in its final 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.



Continuous Rock Drillability Measurements Using Scratch Tests

Junhai Chen^{1,2}, Y. Feng³, Yannong Han^{1,2}, Chengcheng Niu^{1,2}

1. State Key Laboratory of Shale Oil and Gas Enrichment Mechanisms and Effective Development, Beijing, China
2. SINOPEC Research Institute of Petroleum Engineering, Beijing, China
3. The University of Texas at Austin, Texas, USA

Abstract: The traditional drillability measurement using micro-drilling test has the limitations of time-consuming data acquisition and low utilization efficiency of core samples. Moreover, it cannot provide continuous drillability measurements and test results are highly influenced by the heterogeneity of the rock, because the micro-drilling test is single-point test. To overcome these shortcomings, a new technique for continuous drillability measurements using scratch test is introduced in this paper. The new technique is proposed based on correlating the Specific Energy measured from the scratch tests and the micro-drilling tests with PDC bits. This technique can provide continuous and high-resolution drillability measurement, with relatively simple test procedure and high utilization efficiency of core samples compared with the micro-drilling tests. Furthermore, the new technique can capture the effect of the intrinsic heterogeneity of rock on drillability. Finally, a case study is performed using core samples from Songnan oilfield in northeast China. Drillability of these core samples are determined using the newly proposed technique and compared with the measurements of micro-drill tests. The comparison results demonstrate that the new technique based on scratch test can offer continuous drillability measurement with sufficient accuracy.

Key Words: Scratch Test, drillability, specific energy, continuous measurements, heterogeneity

Download English Version:

<https://daneshyari.com/en/article/5483906>

Download Persian Version:

<https://daneshyari.com/article/5483906>

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