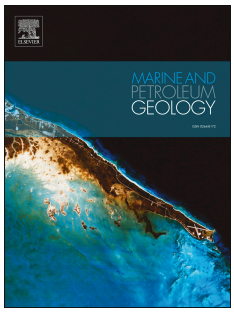
Accepted Manuscript



Sources of quartz grains influencing quartz cementation and reservoir quality in ultra-deeply buried sandstones in Keshen-2 gas field, north-west China

Hui Shi, Xiaorong Luo, Haijun Yang, Ganglin Lei, Yangang Tang, Likuan Zhang, Yuhong Lei

PII: S0264-8172(18)30310-6

DOI: 10.1016/j.marpetgeo.2018.07.032

Reference: JMPG 3436

To appear in: *Marine and Petroleum Geology*

Received Date: 3 August 2017

Revised Date: 3 June 2018

Accepted Date: 30 July 2018

Please cite this article as: Shi, H., Luo, X., Yang, H., Lei, G., Tang, Y., Zhang, L., Lei, Y., Sources of quartz grains influencing quartz cementation and reservoir quality in ultra-deeply buried sandstones in Keshen-2 gas field, north-west China, *Marine and Petroleum Geology* (2018), doi: 10.1016/j.marpetgeo.2018.07.032.

Sources of quartz grains influencing quartz cementation and reservoir quality in ultra-deeply buried sandstones in Keshen-2 gas field, north-west China

Hui Shi[a*], Xiaorong Luo[a], Haijun Yang[b], Ganglin Lei[b], Yangang Tang[b], Likuan Zhang[a], and Yuhong Lei[a]

a *Key Laboratory of Petroleum Resources Research, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China*

b *Research Institute of Exploration and Development, Tarim Oil Field Company, PetroChina, Korla, China*

 Corresponding author at: No. 19, Beitucheng Western Road, Chaoyang District, 100029, Beijing, P.R. China

E-mail address: shihui@mail.iggcas.ac.cn

Abstract

Quartz cementation is a critical factor in the reservoir quality of ultra-deeply buried sandstones because of the high temperature and high-pressure at great depths. Therefore, determining the main influences retarding the growth of the quartz overgrowths is important for predicting the sweet spots of tight gas sandstones. The vast Keshen-2 gas field in Kuqa Depression is typical of such ultra-deep gas fields, despite the porosity and permeability of the target sandstones in the Lower Cretaceous Bashijiqike Formation being less than 10% and 0.5 md, respectively. The main gas reservoirs had been buried previously to a depth of 7000 m, with the maximum fluid temperature approaching 160 , in which authigenic quartz cements are extremely common. The heterogeneity of the physical properties and quartz cementation was