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Anisotropic pore fabrics in faulted porous sandstones

N.J.C. Farrell, D. Healy

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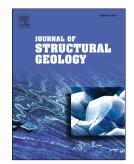
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1	ACCEPTED MANUSCRIPT Anisotropic pore fabrics in faulted porous sandstones
1	Amson opic pore radrics in rauteu por ous sandstones
2	N.J.C. Farrell and D. Healy
3	School of Geosciences, King's College, University of Aberdeen, Aberdeen AB24 3UE United
4	Kingdom
5	natalie.farrell@abdn.ac.uk
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9 The fabric of pores in sedimentary rocks around fault zones can be subject to significant 10 modification. Knowledge of how pore fabrics vary during and after faulting is important for 11 understanding how rocks transmit fluids around fault zones, and can help to predict mechanical 12 instability due to changes in pore fluid pressure. Datasets detailing the geometry of pore fabrics in 13 faulted porous rocks are lacking. This paper describes pore fabrics quantified from two outcrops of 14 normally faulted sandstone. The porosity and the size, shape and geometry of pores were quantified 15 from core plugs and thin sections. Results were mapped within a framework of the faults to better 16 illustrate how these datasets may be used to improve understanding of fluid flow around fault zones. 17 Results from a mature, quartz-rich arenite show a change in pore fabric from pores oriented 18 horizontally and parallel to laminations to pores oriented at a low angle to σ_1 . Pore fabrics 19 quantified from a clay-rich, quartz sub-arkose changed from moderate aspect ratio pores with no 20 preferred orientation, to high aspect ratio pores oriented dominantly sub-parallel to the fault surface. 21 Permeabilities measured on corresponding core plugs showed anisotropy of permeability with 22 maximum permeability oriented down fault dip around both faults.

23 1. Introduction

8

Abstract

Porosity is a measure of a rock's capacity to store fluid, and is simply defined as a scalar value equal to the ratio of the void volume to the total rock volume. Porosity is important to quantify as fluid storage capability determines the amounts of valuable resource fluids that may have Download English Version:

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