Formation Evaluation in Volcanic Reservoirs

Brisbane Seminar

Date: Thursday, 4 April 2019
Time: 3.30 to 4.30 pm

Registration: Please register online at https://www.fesaus.org/.
Numbers are limited, book early to avoid disappointment!

Place: Berwyndale South Meeting Room , Shell/QGC,
275 George St
Brisbane City QLD 4000

Cost: **FESQ and student members free**

Presented by: Tom Neville, Asia-Pacific Formation Evaluation Services

Abstract:

As the development of conventional hydrocarbon accumulations has matured, less conventional sources are gaining in importance. Globally, volcanic rocks have the potential to host significant resources that have been historically overlooked, although such reservoirs are being exploited in several regions. Volcanic reservoirs are also of interest in CO_2 sequestration, providing the potential for both physical and chemical storage mechanisms, and are a major host lithology for many types of mineral deposits. The capability to evaluate matrix composition, pore system properties, and fluid content in volcanic rocks is therefore of economic as well as scientific interest.

Volcanic reservoirs display the most problematic features of the two main classes of reservoir—siliciclastic and carbonate—and present a significant formation evaluation challenge. Volcanics show a wide variability in lithology and mineralogy, confronting the interpreter with minerals rarely encountered in conventional petrophysics in sedimentary rocks. This greatly complicates the determination of matrix properties and hence porosity. Alteration further complicates mineralogy, and hence saturation evaluation, with the generation of clay minerals and zeolites. While the complexity of the rock matrix in these reservoirs rivals or exceeds most siliciclastics, their pore network has more in common with carbonate reservoirs. Volcanics show a full range of pore types, from intergranular micro- and meso-porosity to vug, fracture, and brecciation porosity.

Evaluation of volcanic reservoirs requires integrating appropriate measurements and interpretation methods from across the full spectrum of the petrophysical toolbox. This presentation will review the key types and properties of volcanic reservoirs and highlight some of the most useful tools and techniques for evaluating such reservoir types.

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About the presenter:

Tom Neville is Principal Consultant at Asia-Pacific Formation Evaluation Services, which he founded in 2017. After receiving his BSc (Hons) degree in Geology and Mineralogy from the University of Queensland in 1989, Tom worked for six years as an exploration and development geologist with several oil & gas companies in Brisbane before joining Schlumberger as a petrophysicist in 1996. Over the following twenty years Tom had a variety of management and technical roles in operations, engineering, and research with Schlumberger around the World. Since leaving Schlumberger in 2017, Tom has been working as a consultant in the fields of petrophysics and formation evaluation to the oil & gas, mining, and groundwater industries in the Asia-Pacific region.

Tom has worked directly on formation evaluation projects in volcanic reservoirs in China, Indonesia, Japan, Russia, and the North Sea, and has also studied volcanic reservoirs in Argentina, Australia, New Zealand, and the United States. He is holder of a US patent awarded for a workflow for evaluating volcanic reservoirs and developed and teaches probably the only dedicated course on formation evaluation of volcanic reservoirs in the industry.