FESAus Monthly Technical Meeting

"Petrophysics vs Petrography, Round 2: High resolution Mineralogy Logs"

Jean-Baptiste Peyaud, Baker Hughes

Abstract:
Spectroscopic tools can provide the mineralogical composition of the logged formation but with a low vertical resolution (1 ft): in thin bedded intervals, beds thinner than 30 cm cannot be discriminated easily. Additionally, it is common to see thin argillaceous layers within thicker sandstones or carbonate units: these cannot be resolved and on the contrary, their composition is averaged with the nearby beds. The consequences are that although the mineralogical composition of the formation measured by the tool at its vertical resolution is accurate, it does not allow discriminating the distribution of clay minerals between dispersed/structural clays and laminated clays. This can result in misleading interpretations of the reservoir compositions and properties, and in the worst case, by-passed pay.

The method presented here aims at improving the vertical resolution of the spectroscopic logs by combining them with borehole images. Borehole images record contrasts of resistivity/impedance at a high vertical resolution. Although this cannot be directly related to mineralogy in general, it indicates the occurrence of beds with different properties. Considering the thickness of each type of bed, their corresponding mineralogical composition is modelled so that the average at the vertical resolution of the spectroscopic tool corresponds to the measurement. The method has been tested in different environments, with different (resistivity) imaging tools and gives consistent results: it is now possible to generate mineralogical logs at the vertical resolution of an image log, resolving successfully beds as thin as a few centimetres thick.

About the Presenter:
Jean-Baptiste (JB) Peyaud is a Geologist with a strong background in Petrography/Geochemistry, his specialty is the study of reservoir diagenesis, fluid-rock interactions and the reconstruction of thermal history in sedimentary basins. He obtained his PhD in 2003 at the university of Paris 11 (Orsay), working on the alteration of a shale formation close to faults at a natural analogue site for underground nuclear waste repositories, then oscillated between the industry and the academia for a few years in France, the UK and finally Australia. He evolved toward Petrophysics since 2009 when he joined Baker Hughes to work on spectroscopic mineralogy logs. He currently is one of Baker's experts in this field.

DATE: Tuesday **12th July 2016**, 12:00 – 1:30 PM **VENUE:** Hotel IBIS- 334 Murray Street, Perth

COST: Members $30.00; Non Members $40.00; Students/Retirees $10.00

Online registration at www.fesaus.org

Note: limited seats for unregistered attendees may be available: $50.00 cash door charge