



# FESAus Monthly Technical Meeting

## *“Advanced Formation Logging: A case study revealing the true potential of a gas reservoir”*

Paul Pillai, Chevron

### **Abstract:**

In a development field, the decision to drill or sidetrack a well depends on the flow capacity of the reservoir. This is controlled by the net reservoir and its permeability. New developments in logging technology especially in geochemical and dielectric logging aims to improve the log derived interpretation and reduce the uncertainties of the evaluation.

This paper presents a case study where the integration of the advanced and standard logging tool is used to reveal the true potential of a gas reservoir. In fields with complex mineralogy, the introduction of the geochemical log reveals the existence of iron-rich minerals, which suggests a higher calculated porosity after mineralogy correction. The dielectric log being sensitive to water permittivity was used to measure the irreducible water volume independent of the inputs needed by a typical conventional water saturation method. In oil base mud environments, the dielectric log can measure the irreducible water in the reservoir as it is not displaced by the oil base filtrate. This advanced formation evaluation shows an increase of 22% gas in place in a particular compartment.

A continuous permeability measurement can usually be inferred by the magnetic resonance log based on the free fluid and bound fluid ratio using the Timur-Coates equation. However, this case study shows alteration in magnetic resonance relaxation time and inaccurate permeability estimate. A new approach to compute the permeability from the dielectric log was found to be more consistent with offset data and confirmed by the mobilities from the formation pressure testing tool. The new approach reveals an almost 300% increase of flow capacity compared to conventional methods in the studied section.



### **About the Presenter:**

Paul Pillai is a Petrophysicist in the Earth Science Services team in Chevron’s Australian Business unit. After graduating with a BSc (Hons) in Comp Sc and an MBA, he joined Shell in Malaysia, moving from IT to Project Management and then to Petrophysics, with a short broadening in HR. After stints in Aberdeen, Malaysia and Perth with Shell, he joined Chevron, Perth in 2012.

**DATE:** Tuesday 12<sup>th</sup> Apr 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](http://www.fesaus.org)

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

