



FESAus November 2021 Talk

The exciting applications of 3D Geomechanics in addressing the challenges in the Oil & Gas Industry – Zachariah John Pallikathakathil

Abstract: Geomechanics is increasingly becoming an important component of reservoir management from exploration to abandonment. If rock is removed (eg: while drilling) or pressure is changed in a reservoir (eg: depletion or injection) this alters the stress state of the rock.

This has cascading effect on the operation we are performing.

- **Drilling:** Determining the safe mud weight drilling without incurring hole collapse or fracturing the formation
- **Completion:** Determine safe draw-down without causing sanding issues
- **Hydraulic Fracturing:** Determining the rock elastic properties and stress that are important inputs to the Hydraulic Fracture Stimulation designing.
- **Production optimization:** If the rock has natural fractures and flow is thru fractures, then how will the permeability change with stress in the life of the field.
- **Compaction and Subsidence:** By how much will the reservoir compact or surface subside?

This presentation will go through how **1D and 3D Geomechanics models are constructed** and their applications through examples.

Zach John is the domain lead (Principal) for the Geomechanics and Acoustics group in Schlumberger, Australia, based in Perth. He has been with the Oil and Gas Industry for the last 35 years.

He graduated in Mechanical Engineering from IIT, Delhi in Mechanical Engineering and joined Schlumberger. He has held technical & management positions in Wireline and LWD log acquisition and interpretation. His passion for geomechanics and its multi-disciplinary requirement drew him into the field of geomechanics 15 years ago.

He is currently involved in rock testing design, construction of 1D & 3D Mechanical Earth Models for addressing issues on wellbore stability (drilling), completion integrity (sanding, casing), compaction-subsidence and fault stability over the life of the field for oil and gas reservoirs and New Energy (CCS, Geothermal...).

He is a member of SPWLA (FESAus) and SPE and was the past president of FESAus in 2010, 2011. In his free time he enjoys gardening, vermiculture, cycling, biblical theological studies and serving at his church.



DATE: Tuesday November 09, 2021 - 5:00 – 6:00 PM (WAST, GMT+8)
VENUE: Ibis hotel (Perth), on the web (rest of the world)
COST: Members \$30.00; Non Members \$40.00; Students/Retirees \$10.00; Remote access also available
Online registration at www.fesaus.org by Friday 5th November at 11.00 am