# Distribution and Mechanisms of Overpressure Generation and Deflation in the Neoproterozoic South Oman Salt Basin

***Peter Kukla***, *Geology Department, RWTH Aachen University, 52062 Aachen, Germany, phone: +49 241 8095720, kukla@geol.rwth-aachen.de, Steffen Ochs, PDO, Zuwena Rawahi, PDO, and Mark Newall, PDO, c/o Shell Egypt New Ventures, Cairo, Egypt.*

Neoproterozoic intra-salt Ara reservoirs of the South Oman Salt Basin represent a unique self-charging system with respect to hydrocarbon and overpressure generation and dissipation. Reservoir intervals frequently contain low permeable dolomites that are characterised by high initial production rates due to reservoir overpressures.

A database of more than 30 wells has been utilised to understand the distribution and generation of overpressures in intra-salt reservoirs that can be separated by up to 350 metres of salt. A temporal relationship of increasingly overpressured reservoirs within stratigraphically younger units is observed, and two distinctly independent trends emerge from the Oman dataset; one hydrostatic to slightly above hydrostatic and one overpressured from 17 to 22 kPa/m, almost at lithostatic pressures.

Current pressure modelling and data inversion suggests that overpressure generation is driven by fast burial of the stringers in salt, with a significant contribution by kerogen conversion. Numerical modelling, however, is unable to predict the hydrostatic pressures observed in several reservoirs and it is proposed that present day hydrostatic stringers have seen lithostatic overpressures in their earlier geologic evolution. Evidence for these initial overpressures in currently hydrostatic reservoirs is provided by hydrocarbon-veined cores from halite overlying the reservoirs. A proposed pressure deflation mechanism can be related to the complex interplay of salt tectonics and Haima deposition. Today, hydrostatic stringers are likely to be encountered where the salt is thinnest and/or the stringer is in contact with Haima sediments.