

VIC/TAS Branch

Overpressures are predicted by means of compaction curves. The normal assumption made is that overpressures are associated with anomalously high porosities and "undercompaction". This seminar will investigate other mechanisms of overpressuring and their impact on prediction. It is shown that the assumption of undercompaction leads to gross errors in predicting pore pressures in certain cases, resulting in drilling problems and increased well costs.

A strong relationship exists between pore pressure and the natural fracture gradient of a sedimentary rock. Examples are given where overpressuring seems to be associated with stress rotation at depth. It is demonstrated that overpressuring can be caused by changes in stress, but can also itself result in stress rotation. This is discussed in the context of seal integrity and mudweight design in drilling.

A case study is given on the Scotian Shelf, Canada, where overpressure is demonstrated to be caused by hydrocarbon generation. The generation of fluids at depth has had a profound impact on the stress regime and horizontal stress orientations in the area. The implications of the findings on exploration and drilling in overpressured Australian basins are discussed.

Luncheon talk to be presented by Najwa Yassir (CSIRO Petroleum) to PESA VIC/TAS Branch meeting on Wednesday, June 18, 1997

"Overpressuring: Causes and Effects on Exploration and Drilling"

Pore pressures at depth can be so abnormally high that they almost "lift" the weight of the overlying rocks. This condition not only results in drilling problems, but can also breach the seal and result in leakage of hydrocarbons by hydrodynamic drive. As such, overpressuring needs to be better predicted and understood.