

Pressure and Physical Property Responses in a Toe Thrust Environment

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Observations (pore pressure and physical properties) from recent offshore drilling in a deltaic toe thrust belt show decoupling between under-thrust and thrust sediments, suggesting that low angle detachments and thrusts are substantially weaker than the bulk section. Large variability in pore pressures was observed over the delta, but decoupling between sub-thrust and thrust domains appears to occur in both normally pressured and severely overpressured regimes, so it appears that overpressure may not be the cause of low strength of the detachment. These data support previous models indicating that vertical changes in compaction state at individual well locations reflect vertical changes in mean and shear stress states as wells penetrate different structural domains. Results also show that changes in stress regime must be taken into account when using velocities for pressure prediction, as pressures may be over or under-predicted if stress regimes are not taken into account.