Wednesday, April 29, 2009

Petroleum Club • 800 Bell (downtown)
Social 11:15 AM, Luncheon 11:30 AM

Cost: $30 pre-registered members; $35 for non-members & walk-ups; Emeritus/Life/Honorary: $15; Students: FREE

To guarantee a seat, you must pre-register on the HGS website (www.hgs.org) and pre-pay with a credit card.
Pre-registration without payment will not be accepted.
You may still walk up and pay at the door, if extra seats are available.

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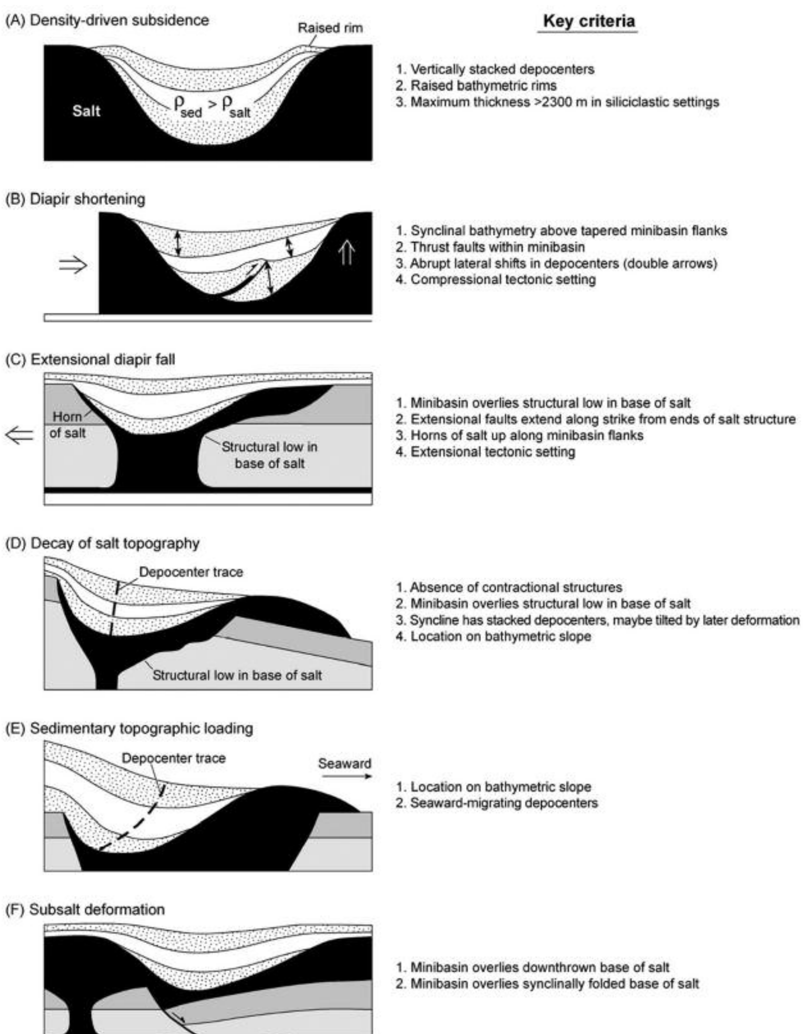
The Paradox of Minibasin Subsidence into Salt

Why do salt-floored minibasins subside? An almost universal explanation is that salt is forced from beneath the sinking basin by the weight of its sedimentary fill. This explanation is valid if the average density of the basin fill exceeds that of salt, which needs at least 1,600 meters of siliciclastic fill to ensure enough compaction. However, most minibasins start sinking when the fill is much thinner than this. Some mechanisms other than density inversion must explain the early subsidence history of these minibasins. Conventional understanding of minibasin subsidence is thus incomplete.

We identify five alternatives to density-driven subsidence of minibasins. During *diapir shortening*, the squeezed diapirs inflate, leaving the intervening minibasins as bathymetric depressions. In *extensional diapir fall*, stretching of a diapir causes it to sag, producing a minibasin above its subsiding crest. During *decay of salt topography*, a dynamic salt bulge subsides as upward flow of salt slows, which lowers the salt surface below the regional sediment surface. During *sedimentary topographic loading*, sediments accumulate as a bathymetric high above salt. Finally, *subsalt deformation* affecting the base of salt may produce relief at the top of salt. Each mechanism (including density-driven subsidence) produces a different bathymetry, which interacts with sediment transport to produce a different facies pattern in each type of minibasin. The particular mechanism for minibasin subsidence depends on the tectonic environment, regional bathymetry, and sedimentation rate. The spatial variation of minibasins on a continental margin creates provinces in which a given minibasin style is dominant. An appreciation of subsidence mechanisms should thus improve understanding of minibasin fill patterns and allow genetic comparisons between minibasins. ■



Biographic Sketch

Mike Hudec (michael.hudec@beg.utexas.edu) received his Ph.D. from the University of Wyoming in 1990. He worked for Exxon Production Research specializing in salt and extensional tectonics from 1989 to 1997 and then taught structural geology at Baylor University from 1997 to 2000. Dr. Hudec joined the Bureau of Economic Geology in 2000, where he co-directs the Applied Geodynamics Laboratory, an industry-funded research consortium studying salt tectonics. His current research interests include palinspastic restoration of salt structures, salt-sheet emplacement mechanisms, and minibasin initiation.

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