

04. Impact of interbedded lithologies on pressure and stress of a salt system

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ABSTRACT

We simulate how a salt wall rises, forms a salt sheet, and finally welds along its feeder in a shortening basin with and without interbedded permeable lithologies to investigate the impacts of these beds on the pore pressure and stresses near salt. We show that the impact of permeable beds differs substantially before and after the emplacement of a salt sheet. Before a salt sheet forms, these beds focus pore water flow toward salt, increase pore pressure and reduce seal capacity (Fig. 1). In contrast, after a salt sheet forms, shallow permeable beds focus pore water flow away from the base of salt, decrease pore pressure and increase seal capacity (Fig. 2).

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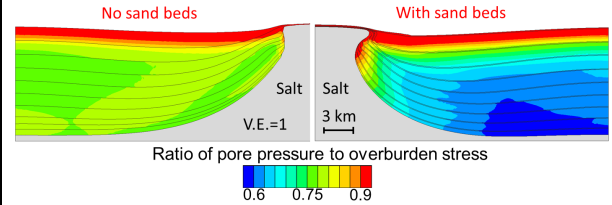


Fig. 1: Kinematics of salt system and ratio of pore pressure to overburden stress in basin with (right) and without (left) interbedded permeable beds before emplacement of a salt sheet. Permeable beds lie along the bedding lines (right basin).

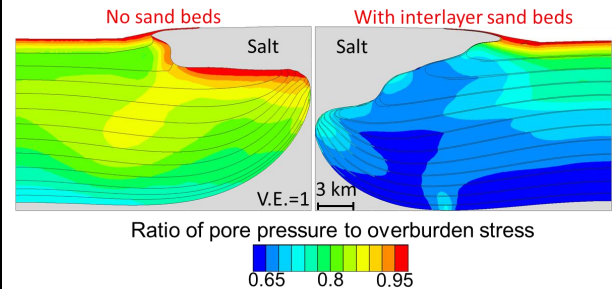


Fig. 2: Kinematics of salt system and ratio of pore pressure to overburden stress in basin with (right) and without (left) interbedded permeable beds after emplacement of a salt sheet. Permeable beds lie along the bedding lines (right basin).

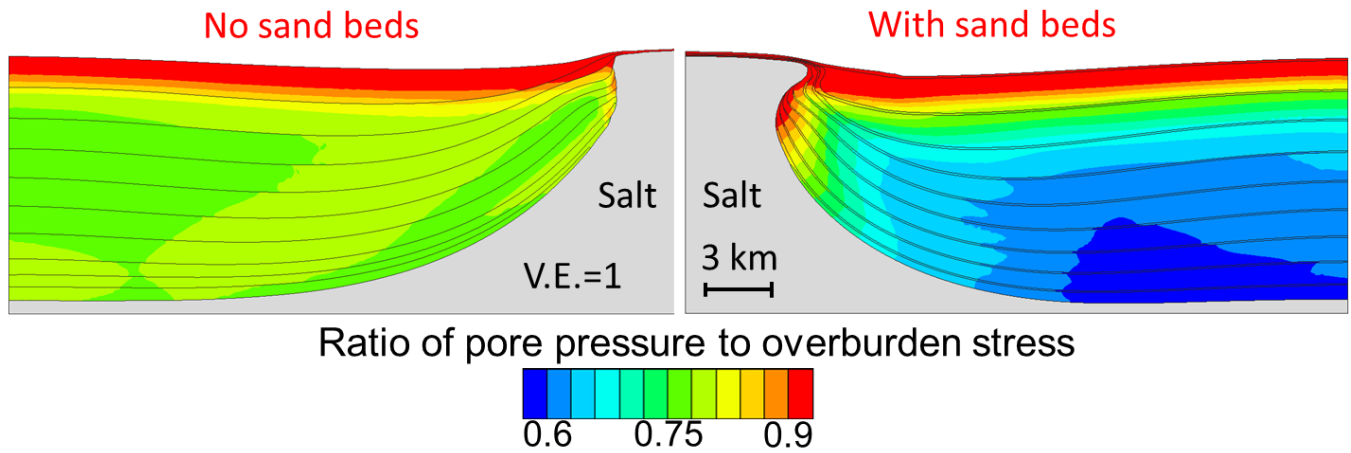


Figure 1: Kinematics of salt system and ratio of pore pressure to overburden stress in basin with (right) and without (left) interbedded permeable beds before emplacement of a salt sheet. Permeable beds lie along the bedding lines (right basin).

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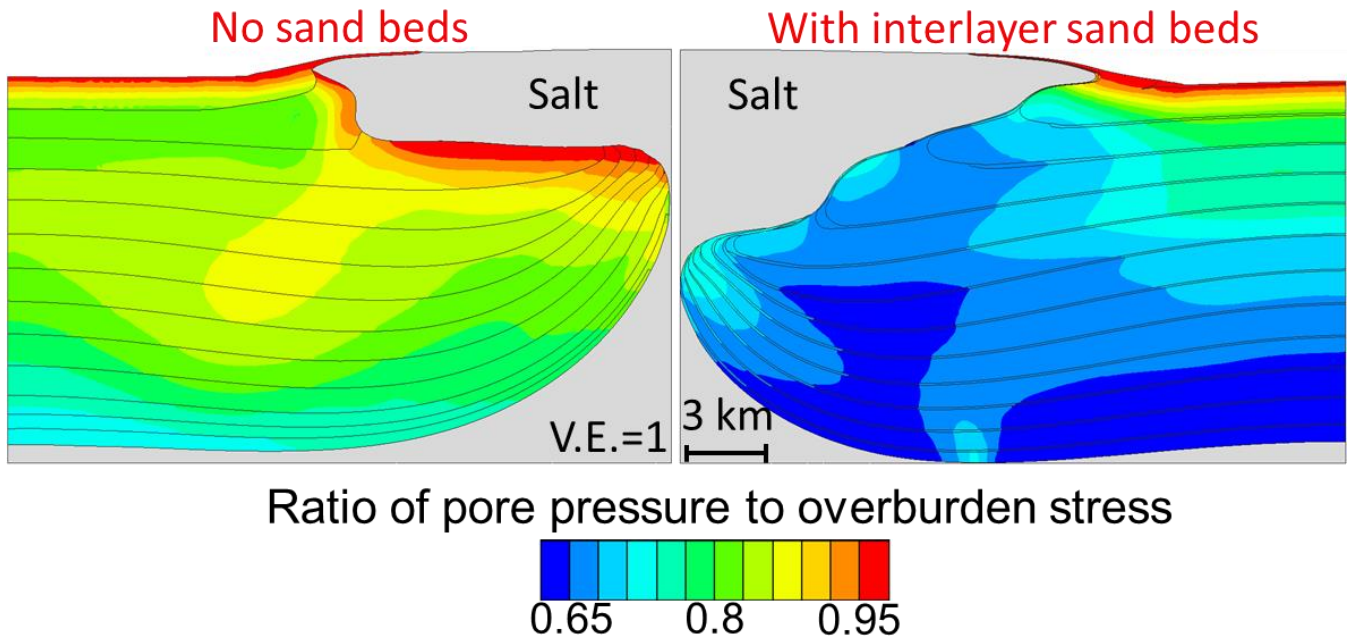


Figure 2: Kinematics of salt system and ratio of pore pressure to overburden stress in basin with (right) and without (left) interbedded permeable beds after emplacement of a salt sheet. Permeable beds lie along the bedding lines (right basin).

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