

Thrust weld development in contractional scenarios: Insights from analogue modelling and implications for oil exploration

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Abstract: The interest of the oil and gas industry on thrust-welds stands on their sealing properties and their potential on generating structural traps. Due to the properties of the salt and the actual resolution of the seismic acquisition, the quality of seismic data concerning these structures is usually poor, hindering a correct interpretation. Thus, understanding how thrust-weld develops is critical to identify them and characterize possible traps associated.

This project uses scaled physical models to investigate the evolution of pre-existing salt structures (diapirs and walls) under compressional settings, and which are the main elements that determine if a secondary weld can evolve into a thrust-weld or into a decapitated structure. For that, an innovative approach was employed to build vertical stocks by the use of moulds, and 6 different sand-box models were designed to analyse the role of 6 different parameters: 1) *the shape of the salt stock* (diapir or wall), 2) *the degree of shortening*, 3) *the thickness of the overburden*, 4) *the presence or absence of source layer*, 5) *the dip of the stock* and 6) *the presence of a pedestal*.

Keywords: Salt tectonics, thrust-weld, decapitated diaper, secondary weld.