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Salt-Fall Detection in Oil Storage Caverns

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Abstract

In an oil-storage cavern, salt-block fall generates pressure waves that can be recorded at the brine-string wellhead. An example of this was provided in a paper presented during the Albuquerque SMRI Meeting by Hart et al. (2017). In the present paper, it is suggested that these pressure changes originate from gravity waves such that the brine-oil interface swings in the cavern. These events are easier to record when the brine-string shoe is not too far below the oil/brine interface (h_b on Figure 1) and when the offset between the brine-string shoe and the cavern axis of symmetry is sufficiently large (r_s on Figure 1). Information on block size can be inferred from the analysis of pressure waves.

Key words: Caverns for Oil storage, Cavern Testing, Waves in Salt Caverns, SPR, Big Hill.

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