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Assessing Cavern BC-20 Sidewall Integrity in Vicinity of Edge of Salt Dome at Bayou Choctaw SPR

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Abstract

Bayou Choctaw Cavern 20 is located near the edge of the salt dome. Its proximity close to the edge of the dome raises concerns about potential tensile failure in the surrounding rock near BC-20 induced by the cavern volume closure due to salt creep. The location of BC-20 in the salt dome is similar to the cavern involved in the Bayou Corne Sinkhole, which suggested that a risk of loss in integrity of the sidewall of BC-20 should be investigated. This paper evaluates the structural instability in the salt between the dome edge and the cavern through a geomechanical analysis using a newly developed numerical model. The results from the analysis indicate that if we keep the new normal operation brine-side wellhead pressure, the edge pillar has no predicted risk of structural instability in the form of tensile failure and/or dilatant damage.

Key words: Numerical Modeling, Sidewall Integrity, Edge of Salt Dome, Sinkhole

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