

Solution Mining Research Institute, Fall 2007 Technical Meeting
Halifax, Canada, October 8-10, 2007

**ONSET OF TENSILE EFFECTIVE STRESSES
IN GAS STORAGE CAVERNS**

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Abstract

In this paper, the effect of a rapid pressure build-up, as is observed in a gas cavern experiencing large yearly pressure cycles, is discussed. It is proved that such build-up leads to the onset of tensile effective stresses at the cavern wall. Three different constitutive models are considered, and computations are performed for the case of a 1500-m deep cavern. It is proved that the extent of the tensile effective zone is not extremely sensitive to pressure build-up rate. This zone becomes larger when the cavern experiences a large number of cycles.

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