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A SIMPLIFIED SOLUTION FOR GAS FLOW DURING A BLOW-OUT IN AN H₂ OR AIR STORAGE CAVERN

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Abstract

A small number of blow-outs from gas storage caverns (for example, in Moss Bluff, Texas and Fort Saskatchewan, Canada) have been described in the literature. Gas flow lasted several days before the caverns were empty. In this paper, we suggest simplified methods that allow for computing blow-out duration and evolution of gas temperature and pressure in the cavern and in the well. This method is used to compute air flow from a shaft mine, an accident described by Van Sambeek (2009). The case of a hydrogen storage cavern also is considered, as it is known that hydrogen depressurization can lead, in certain cases, to hydrogen temperature increase.

Key words: blow-out, salt caverns, computer modeling, air, H₂, thermodynamics.

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