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A Cavern Abandonment Test at Gellenoncourt, Lorraine

- An Update -

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Abstract

CSME operates a brine field at shallow depth at Gellenoncourt, Lorraine, France. An abandonment test, based on the trial-and-error method, began at June 10, 2010. This test consists of monitoring wellhead pressure evolution after a cavern is shut-in. Cavern brine temperature is measured to check that thermal equilibrium between cavern brine temperature and rock mass temperature at cavern depth was reached, as proved by brine temperature measurement. At the beginning of the test, cavern pressure is changed from time to time. When pressure consistently increases (respectively, decreases) it can be inferred that cavern pressure is below (respectively, above) the equilibrium pressure such that cavern creep closure exactly equals brine seepage to the salt formation. The first results of this test were presented during the 2013 SMRI Meeting in Avignon, France. The present paper is an update. It is proved that height years after the test began, pressure evolution remains consistent with what was predicted. Cavern closure rate and salt mass permeability can be back-calculated from the test results.

Key words: Cavern Plugging and Abandonment, Cavern Testing

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