Lessons Learned from a Shale Gas Hallmark Well in the Eagle Ford Formation: The Case of the Well Emergente–1, the First Shale Gas Well in Mexico

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ABSTRACT

The results of the yield of the Emergente–1 well are analyzed and discussed in the frame of the petroleum geology of the Eagle Ford play. The departure of the real output of the well from a probabilistic forecast provided prior to its making is explained in terms of overestimation of reserves and formation damage. A numerical model of the production of the well is carried out using the fundamental equation of mineral production (FEMP). To that end, a time-dependent model of the production to reserves ratio (PRR) is devised, showing a succession of linear trends with time. With the support of the linear trends found, the FEMP is then enabled to reproduce the output of the well. These trends indicate the existence of decreasing pulses of rise and decline of gas yields embedded in the overall trend of production of the well. However, after seven years of production the PRR adopted a near constant value, which has enabled to apply the equation of cumulative production of the set of Equations of Mineral Production to estimate an ultimate recovery (EUR) after 30 years. This EUR is only 8% above the factual upper end of 2.0 Bcf of total volume statistically recorded for the shale gas wells producing from the Eagle Ford play.

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