

FEASIBILITY OF CONTROLLED SOLUTION MINING FROM HORIZONTAL WELLS

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Introduction

Member Companies of the SMRI are currently using horizontal drilling to establish initial connections between wells for solution mining in bedded salt formations (Conti and Schumacher, 1991). Horizontal wells, as compared to hydraulic fracturing, can be used to concentrate solution mining in selected strata. This generally results in improved brine quality and mining efficiency. Strata aligned caverns, or SACs, formed by “horizontal” solution mining also appear potentially more suitable for storage operations in bedded salts than the multi-ledged caverns conventionally formed from vertical wells.

D.A. Shock proposed the use of horizontal caverns for storage in bedded salts almost thirty years ago (1965), and thus the concept is not new. However, Shock considered then state-of-the-art hydraulic fracturing to initially connect wells, rather than horizontal drilling. Now horizontal drilling can be used to achieve selected solutioning paths between wells. The objective of this paper is to explore the feasibility of controlling solution mining from horizontal wells so as to shape SACs suitable for storage while also maintaining efficient brine production.